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MAIN CURRENTS IN MODERN THOUGHT

A monthly service that brings together contemporary data in all fields, as these issue from laboratories, studios, class-rooms, observatories and wherever man pursues the eternally intriguing and beautiful mysteries of Nature

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"Ah, but a man's reach should exceed his grasp, or what's a heaven for?"—BROWNING

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MAIN CURRENTS IN MODERN THOUGHT is a quarterly journal which calls attention to significant contributions to learning currently being made by leading workers in the multiple fields into which knowledge has come to be classified. It relates these advances to each other and to the classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. In condensing text, square brackets[ ] indicate editorial interpolation. Five dots . . . . . in the text indicates a word, phrase or passage omitted in the interest of brevity or clarity. Other usages are standard. MAIN CURRENTS is published quarterly in close cooperation with the Guild of American Economists, Inc., at $5.00 a year. Contributors to MAIN CURRENTS enjoy full liberty of opinion and of expression in th[illegible]
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CONSCIOUSNESS

Editorial Summary

THE TWENTIETH CENTURY FUND office reports that it contemplates a third edition of its useful list of the foremost 250 associations and the United Nations Governments carrying on some variety or other of post-war planning: *Post-War Planning in the United States*, Twentieth Century Fund, 330 West 42nd Street, New York City, Second Edition, 1943.

It is probably too much to expect that the associations listed will make definite headway toward specialization of function and unification of purpose as a result of reading the present excellent compilation. Yet the need to do this is clear. The extremities of the extant list reach from powerful groups, whose plan seems to be to avoid planning as much as possible, to other and mostly uninfluential associations with highly detailed schemes. No account is taken of a host of individual proposals which range from straight-out world citizenship in order to short-circuit nationalism, ignoring economic problems, to finished deals which parcel out raw resources areas and colonial power with a bland finesse appropriate to bridge players but somehow not quite adequate in the face of the historic forces at play. When the thousands of groups, large and small, are considered, the need for a catalytic to hasten the post-war planning process is self-evident.

To examine this list and then scrutinize specimen detailed publications bearing upon both internal American national planning studies and world-wide surveys has been a toilsome task, not yet completed for MAIN CURRENTS purposes. The sober, middle-of-the-road and well-equipped groups, such as the Carnegie-endowed Commission to Study the Organization of Peace, put out a large wordage and cover the subject so effectively that the reader feels that the vital spark has been smothered. Some burning words, love and brotherhood, equality and fairplay, would help here. Other powerful entities, such as the National Association of Manufacturers, are so reticent as to raise grave thoughts: Is their purpose self-defense? Or is their knowledge inadequate of the historical spate which has been forming during the last five hundred years and now cataracts over the spillway of our times?

As the reader of these books, journals, brochures and special studies sits back and contemplates them after a conscientious battle with their principal proposals, a clear first conclusion emerges: New knowledge has not really been sufficiently sought as yet for the core of the problem, the economics of that freedom which mass production abundance offers mankind. That is the pre-eminent need. No doubt, more knowledge is also required for new varieties of colonial control. We could also profit from a complete re-orientation of our attitude toward India and China. Surveys leading to population resettlement are needed, and much more. But in many of these categories a variety of variable and unpredictable political and other factors intrude, and to know these the world has to stand by for elections and even the creation of governments, and so we are dependent upon events ahead. In others, proper knowledge is being sought, exemplified by the work of the American Law Institute upon a declaration of human rights in world-tenable juridic form. Progress is evident, then, in many sectors, save where one powerful drag remains: ignorance of the economic laws of mass production in a free society.

The Guild of American Economists appears to stand alone in having attacked frontally the problem of getting a grip on new knowledge required for the indisputable new circumstances revealed in our historic hour of planetary change from political, to political *plus* economic freedom. A co-ordination of all planning work under (let us say) the general guidance of the National Planning Association would be a splendid and timely achievement, if prompted by a conscious desire to acquire the knowledge identified by the Guild as necessary to cope with the problem of implementing freedom in a mass production society.

A second issue from study of all this material takes the form of a doubt: Does not our natural Western tendency to organize ourselves obscure the fact that organization is not in itself enough? Groups which gather without a clear conceptual purpose turn out often to be defense mechanisms. In regard to economic problems, for example, statistical studies are useful only to describe what is, but cannot provide knowledge of what must be. Organization devoid of conceptual knowledge of that which is new and emergent is therefore not enough to cope with the three causes of disorder which will still be world-wide when the United Nations have won the war: economic inequities; disparity of place, particularly that granted the peoples of the East; and lack of leadership fitted to implement a peace based upon knowledge of the unity of natural, moral and statutory law. Through suffering, some rule-of-thumb progress has been made toward partial solution of these problems, out of simple necessity to think differently. But a dark threat of relapse lurks in bigotry, fear, imperialism, finance (as contrasted with venture) capitalism, and that literate ignorance which is such a widespread contemporary impediment to progress. In these circumstances, anxiety about the peace remains widespread and, just in itself, organization is no answer.

There is, however, an alternative to organization in that one practical deed which at this moment each individual can best do, independent of any other person, which would count most for a durable peace, a world settlement in which East would take equal place with West, and a solution of America's internal social-economic problem.

That deed is to identify to one's own satisfaction, and on wholly rational grounds, the truly universal nature of the core of personal being, so as to disclose once and for all time the unity of mankind and reveal cause for firm and fresh direction in conduct. In other words, the pro-

posal is to solve personally the problem of the individual in relation to the whole by finding out in what sense we are parts of one another. It is evident that millions of people are more or less consciously troubled by the words individualism and collectivism and by what they are brought to believe they mean. If, by some intellectual act, our separateness be seen as the fiction it is, great and lasting good results.

Such an intellectual feat is of immediate practical importance. Some conspicuous writers identify what they call "the American way of life" with a struggle more truly evil than any we can see in the jungle. They import into human relations notions of natural handicaps Darwin himself never described as part of animal ecology, and ignore the substantial sanctions which the physical sciences, biology and psychology, have provided this century to believe in spiritual relationships among men. The language of the spokesmen of such unenlightenment makes it clear that ethics have not touched them effectively, for they speak of social workers as "do-gooders" and as "parasites," and they are cynical about universal cultural education, as if they themselves were superior to "the masses." Since we have here anti-democracy arising from immense ignorance, reckless selfishness, and a negation of spirituality, and since mind and science are alone generally respected in our society, the practical corrective is to bring reason forward in support of spirituality.

Unfortunately, the word practical is often taken as synonymous with the word physical. To innocents practical deeds might be gifts of money to a cause, distributing leaflets, loud protest at meetings, or a letter to the Editor, a Congressman, or to the President, and these alone. But is that sort of individual act really so practical? People who write their Representative daily are set down as cranks. Loud protests at meetings get one put out. Letters to the editor come to very little in the Niagaras of words today. All this blows off steam and may save the personal boiler from bursting, but unless organized turns no wheels and amounts only to a futile noise of an escape of vapour venting impotent annoyance as it feebly subsides. The wisest of men have always seen that practical solitary steps are those which are philosophically decisive. The truly formidable character is the man who really knows his own mind. He cannot be organized though his knowledge tends to bring about natural organization. To be practical in connection with personal actions in the public domain, then, means first of all to achieve a rearrangement of the mind by philosophical growth which accords with inner laws of Nature. Lincoln and Jefferson are historic models.

Industrialists are widely believed to be practical people. The state of opinion taking shape in informed circles of industrial life today can be discovered by reading the articles which appear in Yale Review, in Fortune, and other journals, written by philosophers, educators and the wiser class of industrialists. In such publications are signs that the exploratory personnel of our industrial groups more and more takes cognizance of the value of philosophy and the force which arises from ideas. Of all problems in philosophy, the relation of the one to the many is centralmost.

The impending peace-time form of the conflict between individualism and collectivism which the war desperately and dramatically forced on our attention is thus the great issue. The war has not fully clarified it, as we can see by the fact that many people long feared Russia more than they feared Germany, and some still do. We can and shall defeat Germany: but fearful folk wonder in respect to Russia how one can wage war upon an idea? The same despair was felt by the enemies of the French Revolution who were first saved and then menaced by Bonaparte. All this confusion arises from lack of clear concepts and principles, individual philosophical ignorance, in the assumption that there is a real choice between individualism and collectivism. In truth, the opposition is fictitious and has no sanction in Nature.

It is possible to discuss the war aspect of the supposed conflict between individualism and collectivism in a detached spirit only with rare individuals, perhaps just because so few have the philosophical equipment required to cope with the apparent fission within themselves. It should be obvious that the Nazi system represents blatant egotism. Democracy was nearly extirpated in Germany. Finance capitalism brought this about. Some German industrialists who backed Hitler are unhappy men, others are dead. The Soviet system is collectivist and not totalitarian. Democracy is coming to life there at a great pace, but the industrial power and the capital credit function are state possessions. It is this which makes Russia seem to be an advanced society.

Russia is our ally in the war and is to be accepted as a friendly power in times of peace to come. Yet over Russia this great struggle goes on in the American mind, in the midst of the intellectual fog of ill-informed opinion. Emotionally, Americans respond generously to the Soviet war achievement. Intellectually, mainly because of ignorance of economics, we are suspicious. All that is certain is that no one dare suggest, during the war, that we should go toward Nazism. This set of circumstances has posed the question: How are we to provide full employment under free enterprise in order to hold our own with Russia in the peace ahead?

And so we come face to face with our theme again. For the real task is to find a working union of individualism (free enterprise) and collectivism (full employment). It means that responsibility for full employment and a discovery of the soul unity of our nation is to be acknowledged and assumed by free enterprise, in the true American spirit. It means that "the American way of life" will no longer be one which dooms great numbers of children to grossly unequal starts in life, or adults to insecurity. And does this not mean that individualism, egotism, consciousness of self, has to be seen in relation to mankind's true unity and collective nature? Does not any violent and angry individualistic assertion of rights divorced from a full sense of the unified soul of the American people proclaim a basic philosophical ignorance? Is the truth, the dispelling of ignorance, to make us free, or is organized ignorance to assume this duty?

The ignorance can be corrected only by those who themselves discover the secret which is obscured by individual self-consciousness. Self-consciousness is the uni-

versal attribute common to all healthy adult mankind, the peculiar mark of man, without which he is as the beasts, without which hands, erect carriage, and miraculous uses of the human voice can have no more meaning than have paws, quadrupedal posture and a grizzly's growl.

To the innocent individual it may appear that self-consciousness is singular, completely separative, and the warrant of selfishness. But if the one thing that marks us off from the beasts is to be taken as making us lower than they are, how can we speak of evolution as a progression? In short, here is the strange, deep, age-old problem of higher self, unconscious of its true soul attributes, yet very conscious that it is not the lower self alone, daily tempted away from spiritual and ethical values in a civilization over-concerned with physical security, where incessant demands are made that we increase our needs by inventing new cravings that goods may be sold. If "the higher standard of living" means mainly a greater variety of gadgets provided to satisfy growing restless desires, as soul and spirit wither away, we are lost. If instead, as a nation we are animated by exalted collective purposes of beauty and worth, and things are going to be many, varied and available to all in a civilization we work out in terms of unity which lies under the illusion of separateness created by ego or self-consciousness, then we are saved. How clear it is, then, that the truth about ourselves shall make us free.

The inquiry into self-consciousness has also international importance, because evil arrangements enforced upon China or India, or a breakdown of relations between Russia and other nations, stem from egotism and the sense of separateness, which arrogance stalks like a shadow. Let us find reason to believe not only that "All men" in respect to self-consciousness, "are created free and equal," but also that we "are parts of one another." Then the filching of lands, limitations imposed, sustained defense of imperialism, will be seen to be evils wrought by the aggressor upon himself as well as upon others. It will also then be apparent that such deeds cannot really defeat the purposes of Nature, though they may delay the march of mankind and cause great suffering. To know the relation of consciousness to the rest of human nature is supremely practical and expedient.

The inquiry, perhaps the primary intellectual duty of the hour, is fortunately open to all, since all are self-conscious and no one can deny the basic datum. The behaviourist may believe that thinking is subvocal speech, if he likes, but as the Upanishad points out, one who denies the existence of self-consciousness in one who sleeps or (in the interest of scientific rigor) even in the open case of physical death, is actually testifying to the reality of it within himself, for he had to be conscious in order so to perceive. The starting point, in short, is not as Descartes misled Europe to suppose: "I think, therefore I am," but: "I am, therefore I am able to observe my thoughts."

Unfortunately, the academic world has not thrown off the vestiges of crass materialism and does not come out clearly in defense of the spiritual nature of self-consciousness in man, if we may judge the state of opinion therein by a standard text such as *Psychology: A Study of Mental Life*, by R. S. Woodworth of Columbia University. The distinction between self-consciousness inhering in the immortal noumenon, and the fluid psyche or changing personality as part of a complex perishable phenomenon, is not made clear. Woodworth brings the term consciousness early and often into his discussion, but in phrases which leave it undetermined whether it is just a yeast in a mental ferment, or a mere cross-section of mind, or something actually superior to associative and commutative mind, capable (as it obviously is capable) of observing mind's operations under certain circumstances: ". . . it remains true that typical mental process, the typical matter of psychological study, is conscious," (p. 7); "feeling is an under-current of consciousness. . . ." (p. 172); "degree of consciousness" (p. 265). A completely circular definition actually occurs (p. 267): "An attentive response is conscious to a higher degree than an inattentive response made at the same time."

The Self is arrived at fifteen pages before Woodworth's text ends, and we may properly then expect great revelations, but this part of the book is as inconclusive as the rest. The very last sentence in the volume is: "Clear consciousness of implicit or dissociated elements in one's personality often prove to be a step toward a firmer organization of the personality and toward a better adjustment to the conditions of life." (p. 570). We are left with the impression that will or volition or some vague thing else is deeper than consciousness, or perhaps that by some species of psychological boot strap lift we shall be able to do something.

Why all this vagueness? The plain fact is that though man and animals both display volition (without debating the difference between human will and animal conation), they do not have self-consciousness in common. Hence self-consciousness is the unique mark of man, and a textbook in psychology which does not expound this theme adequately is fundamentally misleading. One inclines to prefer the blunt assertion that consciousness is just the potential energy of the brain. This is so inadequate as to be just a curious intellectual antique, inspiring one really to think. And thought is here needed. For, if we are to admit self-consciousness to be the mark of highest known evolution, we have to take self-consciousness as an emergent. Its appearance in the child then is to be taken as part of a higher biogenetic law (after Haeckel) and even as having pre-natal existence. It is to be taken as having been smothered in the organism to emerge only when the body is ready for that event. The alternatives are that the organism engenders consciousness under impacts, or else that it is freshly created for each child. For the latter to be tenable we have to make some remarkable theological assumptions about God's relation to Nature. As to the former, we are now about to indicate why it is unreasonable in the light of Hindu thought.

The materials presented may incidentally serve to show philosophers who are restless and dissatisfied with the present state of their subject matter and method concerning the nature of man that we can hardly do better than interrogate the oldest Aryan sources on this, the most ancient and central of philosophical topics,

man's unique attributes; and then, against that rich background, scrutinize afresh the more recent developments in western psychological data. For the philosophy of India represents the lost Aryan, pre-Hellenic cultural heritage, which we need in order to end the long term of our intellectual orphanage.

The present philosophical starvation is of recent origin. If we look into a corresponding text in psychology of fifty years ago we see how much more proportionate was the view of the place of consciousness. Thus, James, *Briefer Course in Psychology*, page 190: "A tolerably unanimous opinion ranges the different selves of which a man may be 'seized and possessed,' and the consequent different orders of his self-regard, in an *hierarchical scale, with the bodily me at the bottom, the spiritual me at the top, and the extra-corporeal material selves and the various social selves between.*" The italics are those of the author himself. He goes on, page 191: "*In each kind of Me, material, social, and spiritual, men distinguish between the immediate and actual, the remote and the potential,* between the narrower and the wider view, to the detriment of the former and the advantage of the latter. One must forego a present bodily enjoyment for the sake of one's general health; one must abandon the dollar in hand for the sake of the hundred dollars to come; one must make an enemy of his present interlocutor if thereby one makes friends of a more valued circle; one must go without learning and grace and wit, to better to compass one's soul's salvation." Truly, since James we have gone a long way backward, and it is high time to call a halt on these modern attempts to reduce man (as does Eddington in *New Pathways in Science*) to a one-eyed, colour-blind cripple who can only read a scale, and through that he is to get all that is true. Eddington, of course, is speaking wittily when he describes that poor creature, and knows full well that he has brushed away all of life except that narrowed visual channel in order to leave consciousness alone with matter. But the tendency to take meaning out of existence has, all the same, gone to terrible extremes and society must take account of the consequent bewilderment and confusion in its institutions of higher learning.

An admirable summary of one portion of Hindu reasoning about consciousness in relation to the Self, or Atman, will be found in J. C. Chatterji's *Hindu Realism*, a rare work which we shall cite. To maintain a sense of proportion the inquirer needs first to review the general state of mind of Indian thinkers. In order to avoid interruption of the present course of thought, we provide elsewhere (page 7) the required summary of India's outlooks, taken from Pandit Chatterji, in the work above mentioned, and also from the late P. T. Srinivasa Iyengar's *Outlines of Indian Philosophy*, thereby incidentally responding to many requests from readers to make at least a summation of Hindu concepts. (To do so we must draw on Hindu writers, for modesty should today prevent any alien to India from attempting such a formidable task. Earlier gross misrepresentations of India's achievements have already misled Europe enough. More recent interpretations by Indians reared in Western education hostile to India's transcendental realism, and prior to the emergence of an identical transcendental realism of the European physicists of this century, stand as another warning to the presumptuous, and contrast with what and how the true Indian truly thinks).

The point here at issue is the place of consciousness in human nature. Pandit Chatterji's summary of India's realistic position alone occupies twenty-six pages. It opens with a reminder that the existence of an immortal ground, in which our consciousness inheres, is recognized by all three couplets of Indian philosophical systems. We may here add that proper understanding of consciousness in Buddhism, and in the Vedānta, the crown of Indian philosophy, shows that all great Indian sources agree. Pandit Chatterji then marshalls the chief points from the realism (Nyaya - Vaisheshika). We present his argument.

The point of departure is the crucial statement that consciousness or experience in general of things, thoughts, feelings and sensations, is a *property*. A property cannot be held to have independent existence of its own. If consciousness is held to be a reality in itself, argument need go no further, the inquiry takes only the form of understanding a reality, as we have to do with energy, or life. The admission that consciousness is a property only, raises the question in true form: a property of what?

The main function of Hindu realism is to show that consciousness is neither a property of body, nor of mutable mind, but a property of a real that is part of the transcendental real. A name is given to that of which consciousness is a property. This is Atman. (Consciousness may not be its only property). In this wise the argument takes its start, and then proceeds by what C. D. Broad calls "enlightened common sense."

Consciousness is not a property of the body. If it were it would be found in various parts of the body. It is not due to the body having a form, as a form is not a reality independent of parts. Besides, we are conscious of the body as a whole. It cannot be essential to the body, for then there would be no death, no sleep. Since it is accidental to the body, the body alone is not the cause of it. Consciousness may be aware of a body as a light illuminates a room, but the room does not cause the light. Whatever the ultimate nature of the unity of body and consciousness, when one is aware of the other, they are other. Consciousness and will may belong to the same reality, but will cannot belong subserviently to a body which it moves. If consciousness were a property of the body, it would be perceived by others; but the consciousness of A never perceives directly that of B. All things are made for use, then used, by men or by Nature. Consciousness uses the body and must be part of that which made it. We are conscious of possessing our bodies. We are certain of consciousness apart from the awareness of the body, but we never can be certain of unconsciousness apart from the body, as it is a contradiction to say we can be conscious that we are unconscious. If consciousness be asserted to be experienced only in conjunction with a body, it does not follow that body causes it any more than when there is darkness no visual perception is possible. All the foregoing arguments apply to the brain in relation to consciousness (Mastishkatmavada, "theory of brain self-

hood"). There is evidence of persistence of consciousness after bodily death. Memory is something of which we are aware, and it persists in spite of bodily particle changes which go on inside the organic whole (Sanghata or Avayin, a whole which changes as a whole), and memory must inhere in something which is within reach of consciousness. If this something be a separate psyche, then consciousness is aware of psyche as it is of body, and so its independence of body is further confirmed. No one denies his identity to himself from day to day: even if he loses his memory, he still says he is himself and not another person. Consciousness is common to the senses but not identical with one or all of them. It observes the flux of vitality of mind and emotion but continues to be itself. As we have seen, it is not produced, so it must be said to emerge in youth. It cannot be destroyed though the body passes away. What we cannot prove has been destroyed, we cannot assume has been destroyed.

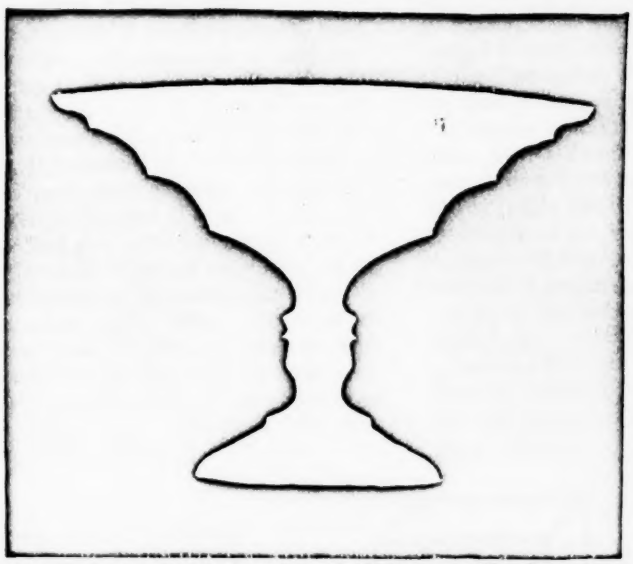
Thus far our summary of Pandit Chatterji's treatise.

All this applies to the case of consciousness, a property — of what? To this "what" a name must be given, nor must consciousness be assumed to be its sole property.

The reality in question has come to be called Atman, and the Sankhya-Yoga and the Vedanta go on from where the Nyaya - Vaisheshika leaves off, attacking the problem of the place and nature of Atman in reasonable terms, until it is identified with the world-reality. Egotism (Ahamkara) is found to be the negative aspect of a positive. The positive turns out to be the universal or absolute ground. A suitable figure is that of an empty bubble in the body of a liquid. The bubble is the complete negation of the real, yet it is possible only because of the real. Such is the meaning of the Maya (illusion) doctrine, nearly universally misapprehended in Europe. The Vedanta has never declared the world to be without reason, but rather a secondary stage of reality.

The predicament of mankind arises from the circumstance that the evolutionary event which provides consciousness as an emergent occurs at the cost of loss of identity with the whole, the absolute. That is, the price we pay for objective power over our lower or animal selves is the fictitious sense of personal isolation. This fiction is the basic form of ignorance, called a-vidya, non-knowledge (of our real nature). As avidya had an origin, it can have also an end. The end is achieved by acquiring knowledge of the true self, as against mere captivity in animality. That end is called liberation (moksha) in the Hindu and Nirvana (blown out or blossoming) in the Buddhist view, and corresponds to the "second birth" notion in Christianity. In India, there is a self-evolutionary technique which can be applied. The Sankhya-Yoga deals with this. The resultant new insight leads to the point of view expressed in the last of the Indian philosophical couplets, the two Mimamsas. Briefly, Atman, of which consciousness is one property, turns out to be the linkage system in which all human consciousness alike, and irrespective of race or evolutionary level, fully inhere. Thus, human brotherhood, human immortality, and the like are certain, and freedom from fear, courage to live life, and resist wrong and aggression by spiritual means, are natural consequents.

Modern experimental attack upon the problem of consciousness began seriously with the Ganzheit psychology and to round out this discussion of the materials which are available in realism East and West we append a good example from Rubin. The observer will notice that the accompanying picture may be taken as a white vase on a dark ground or as two Mayan faces against a white ground. Let him now first see faces, then vase, and he will find that, *though no sense datum changes*, he can change the meaning of the form at will and, most significant of all, his consciousness is vividly aware of the shift of meaning, from vase to faces and back, in his mind. The energy of the mind is also evident. Thus consciousness is associated with will in a common superior aloofness to mind and sensation. Hence the Indian view that consciousness (Ahamkara) and will (Ichchha) inhere in a reality (Atman) superior to mind (manas) and to sensory perception (Indriyas) and are other than body (Sharira) is the view documented by acute modern investigation.



After Rubin. See Gestalt Psychology, G. W. Hartman. The observer sees first either a white vase on a dark ground, or two dark silhouettes facing one another against a light ground. If now the meanings are alternated, first vase, then faces, over and over, the observer gets a growing sense of psychic energy in the event: change of meaning. The importance of this experiment is that *the sense data have not changed at all.* The operation of will upon emphasis, white and then dark, alone changes the meaning. Furthermore, consciousness is here clearly seen to lie below the threshold of meaning, since consciousness experiences the change of meaning powerfully in its own foreground. Thus, reality of will and of consciousness both deeper than meaning (mind), are documented in this one experiment. Other Ganzheit experiments show that there is also intuition of symmetry (the beginnings of artistic intuition) associated with consciousness. If we add mathematical and philosophical power to will and intuition, we have Plato's case for a triune soul close to the core of reality in man, superior to the whole Freudian field of psyche and body.

The net result of the gestalt closure *at the level of meaning* is to impel us to believe that various real levels exist in the human constitution. Taking the core of being as self-consciousness, monadic or atomic in character, we

have experimental evidence that one organism, compounded of psyche and body, trades with the external world by way of meaningful sense-perception, emotion, vitality (the Phi level, in the gestalt system) and the bodily complex (soma). But this does not account for higher being: intuition, artistic creation and the rest of man's superior reach, demanded by Plato's reasoning and human experience as a whole. If the ego is monadic (in the sense of Leibnitz and Shankaracharya) then, and then only, it may be conceived as serving also as the core of higher being, since such a point-ego can trade with many levels and spaces indifferently. In this, the ganzheit psychology, is the beginning — though as yet only the beginning — of a validation of Plato's view of man as a real complex and a microcosm.

Decision in philosophical matters of this kind is evidently important to groups of educators and to production groups as well as to the other great pairs of necessary opposites, management and government. If the spiritual roots of man are once and for all determined to be real, then educators who ignore this superior element are likely to train where they should educate, and try to educate that part of the child which requires training jointly by teacher and the inward emerging consciousness of the child. A little reading of Plato's *Phaedo* would be useful in this connection. Freedom from fear becomes the chief responsibility of education through a valid philosophy, rooted in nature, law and order.

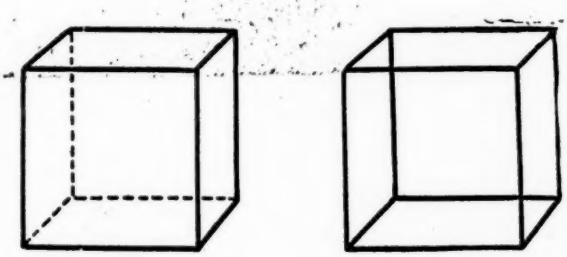
As to the production group, if people are souls, then the frustration of hundreds of thousands of souls for eight, ten or twelve hours of machine-minding in ugly surroundings and often upon unlovely products is a real cause of social pressure, acute since mass production has come into existence. It follows that the steady conversion of places of work into places of living, concurrently with great progressive reductions of work hours, is a necessity, and nature will give us no rest until we move appreciably in that direction. If we are souls, then art as the handmaiden and beauty as the companion of every worker is a specific claim upon society. Freedom of expression thus is more than a right of press, pulpit and person. It includes freedom of the worker to create, because the principles of production are those of the arts, and denial of the creative urge arises from false economics against the public interest.

Likewise government, as the body charged with justice and the maintenance of fairplay, has a new kind of religious sanction in its hands. In place of piety only, and despite pressures of old traditions which make it seem natural to equate religion chiefly to after-death salvationism, and also quite outside all problems related to church-and-state, officials of all government branches can rest their highest obligation upon a specific realism. Freedom of thought becomes a positive and ceases to be a negative.

The kind of science, finally, which management needs to have at hand is no longer a poor positivism, inadequate even for the modern electronic sciences, but a truly flexible instrument in which spiritual values have a superior place. When advertisers say they mean to increase peoples' want so that the consumers will buy more goods, they are proposing to add to human cravings without intending to strengthen human souls against mere appetites thus exploited. How shall we reconcile the competition of advertisers, who try to possess our psyches by means of commercials, with the intent of governments to free us from want? Freedom from want, and enlargement of low psychological cravings, are conflicting interests. The goal in seeking freedom from want has to be more than a physical security. The industrial world is entitled to entice us with gadgets and comforts, if it provides the wherewithal to possess these goods, but even so only if society as a whole strengthens souls in beauty, truth and goodness in proportion as the advertiser strengthens cravings at the lower or psychic level of life. The matter has crucial importance to industrialists themselves, and to all of us, as souls.

Those many individual men and women in managerial posts whose convictions have long been intuitively turned toward serving the soul of man no less than fortifying bodily life, need no longer wait upon others who are caught in the web of ignorance and fear of change. A science of the human individual is available to show the soul is the higher part of a total, in which psyche and body are but animal elements. The creation of a related science of social organization, the anatomy of a free organic society, have become feasible, and any individual, whether in management, production, government or education, can take his own decisive steps to grasp and use it.

F.K.



NECKER'S CUBE. On the left the educated eye reads three dimensional meaning into the picture one way only, with the dotted edges farthest from the observer. On the right the lines are all uniform, and the faces of the cube may be selected at will, first one set of three being those nearest the observer, then another set of three.

UNITY IN INDIA'S PHILOSOPHY

Extracts

THE PASSAGES which follow immediately are quoted from *Hindu Realism*, by J. C. Chatterji (The India Press, Allahabad, 1912), and serve to describe precisely, and simply, the difference set up in Indian thought between philosophy, which therein is never divorced from ethics, and metaphysics, which is concerned centrally with liberation. The passages which follow next thereafter, describing the essential points of agreement common to all forms of Indian philosophy and metaphysics, are adapted from another little known work, *Outlines of Indian Philosophy* by the late P. T. Srinivasa Iyengar, (The Adyar Library, Madras, 1909).

The purpose in printing these citations is to allocate consciousness to the place it occupies in India's outlook, where it is conceived as a partless true atom, which alone can be conceived as enduring, since only that which is without parts can be admitted to survive the eternal flux. Indian thinkers have concentrated the power of their acute minds for thousands of years upon the relation of this true core of human nature to the ground in which it inheres and its relation to the complex of mind and body in which it is immersed. In this way the unique genius of India has provided a practical solution of the problem of the One and the many, suited well to current Western scientific concepts, though now only available in leached-out skeletal form.

We quote first from Pandit Chatterji's volume above referred to, page 3 and following:

"Hindu philosophy falls into two broad divisions, namely: (1) Rational demonstration of propositions of duty; that is to say, what a man should or should not do in order to realize happiness, in some state of specific existence. This is called Dharma-mimamsa [interpretation of duty]. (2) Rational demonstration of propositions in regard to those truths about the fundamental nature of things which a man should realize by direct experience, to be absolutely freed from suffering and absolutely independent. This division may be called Tattva-mimamsa [truth interpretation]. It is also called Moksha-darshana [liberation-insight]. We shall call it simply metaphysical philosophy, and refer to the truths discussed therein as metaphysical truths.

"While . . . two divisions are made in regard to their special subject-matter, yet the Dharma-mimamsa is not, and cannot be, entirely free from some reasoning about metaphysical truths. For the very propositions it has to discuss are based on these truths. . . .

"As for metaphysical philosophy, it is represented by a number of what are called [Darsanas, "demonstrations"], Tantras, ["rules, rituals"], or Nayas, ["theories, principles"], words which can be translated as *schools*, using this term in a sense which is . . . [notably] different from that which it usually bears in connection with philosophy in the West. There are several of these schools but [they turn out at last to be] . . . only three systems grouped as follows: (1) Nyaya-Vaisheshika [logic and atomism]. (2) Sankhya-Yoga [the particular great principles of cosmos and the psychological relation of man to them], and (3) Vedanta [the "end of the Veda" or ultimate sense of the Veda]. . . . Thus, in reality, there are only three metaphysical systems of the Hindus. These systems again are not considered as mutually contradictory. They are regarded as a graduated series in which the three systems form, as it were, three great standards, suited to different types or grades of minds — different intellectual (and only intellectual) capacities and temperaments.

This position follows as an inevitable consequence of the very conception the Hindus have of Philosophy itself. What that conception is . . . might perhaps be made a little clearer by stating here certain ideas which are universally held by all Hindus. They may be considered the general preconceptions of the Hindu mind. But they are preconceptions for which the Hindus have reasons that are, to them, quite full and satisfactory. Without, however, giving any of the reasons here, I shall first just state what, to a Hindu, seem to be the corresponding preconceptions of the Western mind; and then just give the Hindu ones, so that the latter may be seen by opposition, as it were, in clear relief. The two sets of preconceptions are, as it will be seen, diametrically opposed to each other.

It seems to a Hindu that Western students of his philosophy start generally with the following pre-suppositions, which are apparently assumed as established facts: (1) Man can never know metaphysical truths by *direct experience*, in the same way, for instance, as he can know sense objects. And, therefore, metaphysical truths can, at best, be but matters of *speculation* and mere *inferences* or only based on *faith*. (2) Even if it be conceded, as a sort of possibility, that men may perhaps know these truths some day by direct experience, yet there has been so far no man who has known them in this fashion. (3) Therefore, being matters of pure speculation, the various schools of Hindu philosophy, like any other speculative systems of the West, must be mutually contradictory, and if any one of them be true, the others must be false.

As against these, the Hindu preconceptions are: (1) Man can *know* metaphysical truths, like any other truths, *by direct experience*, and not merely by speculation, by inference, or by faith. (2) There *have been* men in the past who have thus known the whole truth of our nature and existence, as well as that of the Universe as a whole. These men are known as Rishis, which term, in this connection, may be translated as "perfected seers." (3) And, it is by knowing metaphysical truths by direct experience that some of the Rishis

have taught them . . . (4) But the Rishis have taught the metaphysical truths not as dogmas, to be received merely on faith, but as rational demonstration. That is to say, they have demonstrated *by reasoning* the truths already realized by them as matters of direct and positive experience. And it is this *rational* demonstration of, that is demonstrating *by reasoning*, the metaphysical truths, which constitutes philosophy according to the Hindu point of view. The function of philosophy, therefore, is not the *discovery* of metaphysical truths, by reasoning and inference; but only the *explaining* and *understanding rationally* of such truths already discovered and realized by experience. [Thus Indian philosophy is the true companion of Western science, since in both disciplines observation comes first, and explanation afterward; in both nothing is valid which is not experienced in common by all qualified observers. Thus philosophy in India is truly a higher department of general science. It is not surprising, therefore, that it is the Hindus who devised the decimal system, conceived zero, invented algebra and other technics which, upon arriving in Europe, made Western science possible.] (5) These truths, being realized by the Rishis by direct experience, that is, not being conceived by them as matters of mere speculation, inference or faith, all the Rishis have known them as the same, in much the same way as all who are provided with eyes may know the sun as one and the same thing. (6) But, while the metaphysical truths as realized by them are the same in every case, the Rishis have taught this one and the same set of truths, in what may be called three different standards or grades, which are represented by, but not necessarily exactly the same as, the great textbooks known as the philosophical sutras. And they thus have taught in order to suit different minds, in much the same way as, say, the grammar of Sanskrit or Greek may be taught in different standards, such as practical, historical, philological, and so on. (7) And it is these three different standards of teaching and presenting rationally one and the same body of essential truths, already realized by the Rishis by direct experience, which constitutes the three fundamental systems of philosophy mentioned above. They are therefore not contradictory to one another, but together form a single and gradually advancing series, in which, it may be pointed out, the order of the three systems may or may not be one of historical succession. (8) Not only are the three different standards of philosophy not contradictory to one another, but they all lead to the same practical end. A man may pursue any one of them, according to his intellectual capacity and temperament, and yet reach the same practical end as others following the other standards. . . .

That the Hindus regard their different systems as forming a gradually advancing series has not been entirely unknown in the West. It was known, in a more or less confused manner, even to Friedrich von Schlegel. . . . Professor Max Müller came to realize it in a fashion, in so far as he recognized the one fundamental basis of all the schools of Hindu philosophy. He says: 'The longer I have studied the various systems, the more I have become impressed with the truth of the view taken by Vijnana Bhikshu and others that there is behind the variety of the six systems a common fund of what might be called . . . a large Manasa lake of philosophical thought and language, far away in the distant North, and in the distant Past, from which each thinker was allowed to draw for his own purpose'." [Six Systems of Indian Philosophy, p. XVII. The phrase "Manasa lake" is apt, the term *manas* meaning mental].

What, then, are the central terms agreed upon by all the three couplets of the Indian darshanas? We adopt them from *Outlines of Indian Philosophy*, by P. T. Srinivasa Iyengar devoted to precisely this, the chief points agreed upon by all. From what follows it will be evident that Indian thought is the antithesis of individual speculation, since the matters agreed upon are of high importance, not incidental to philosophy. Thus Indian philosophy is seen once more akin to scientific method: generally accepted principles have been assembled, by repeated contributions made by many. Space does not allow us to develop the fifteen points below, nor to discuss the manner in which the logical and atomic foundations (Nyaya-Vaisheshika) fit modern Western attitudes in science. Specimen of India's treatment of problems which haunt the European mind even today (such as the reality or unreality of the external world) may be scheduled for later publication, especially if interest is evinced. For the present we cite only the categorical list. These statements are not to be taken as some sort of dogma, or religious revelation. They might be looked upon as the tight, secure knots in a great net of ideas whose threads can readily be run out into a regular system and pattern of independence.

(1) Man is a complex of consciousness, mind and body. (2) The Atman (true self) is of the nature of consciousness and is immutable. (3) Mind (antahkarana, the whole structure between Atman and body, contrasted with manas, emotion and mere ratiocination) though an inner organ, is material and is other than the Atman. (4) Psychic life obeys fixed laws and hence all mental events are determinable. (Indian determinism is not to be confused with fatalism or mechanism.) (5) The five sense organs (jnanendriyas, hearing, etc.) and the five action organs (karmendriyas, speech, etc.) are, like the mind, made of subtle matter. (6) The mind and the sense- and action-organs inhere in a subtle body (lingadeha), which is relatively permanent. (7) The lingadeha (approximately, soul) is periodically connected with a body of flesh and blood, which provides man with sense-organs and action-organs of gross matter. (8) Matter (prakriti) is mutable, but increate, and obeys fixed laws. The fixed laws are inherent in matter. (9) The world history is made up of alternate periods of ordered activity (kalpa) and rest (pralaya). (10) The subtle elements that make up all objects correspond to the senses. (11) All energy in the universe is personal, i.e., bound up with consciousness of varying degrees of intensity. (12) This energy is prana (life) which is intermediate between spirit and matter. (13) The law of causation (karma, action and

reaction) is supreme in the physical and mental worlds. (14) The course of causation (karma), or samsara (literally, "going about") had no beginning (anadi). (15) Freedom from that course (moksha, liberation) is the goal of human life, and results from the training of the mind, and hence reaching the state of moksha is a definite mental event — "mind" and "mental event," being taken here as referring to the whole of the inner man.

Upon these principles it would be possible to show how the chief European thinkers are in agreement in the degree in which they come close to one or another of the general rules of Nature: Leibnitz's monads are not in conflict with Fichte's absolute ego, the atoms of Democritus, the anu (atom) of the Nyaya, the Atman of the Vedanta. Recourse to a brittle eclecticism is unnecessary in order to achieve this accord, nor need one stand apart, in a state of obscurantism, from religion, the arts, the sciences and the social forces of our times in bringing off such a unity. F.L.K.

WHERE ANGELS FEAR TO TREAD

Extracts

AGAINST THE background of sustained inquiry into "various phases of the sub-social and the social life of non-human animals," Dr. W. C. Allee writes interestingly of human ethics under the above title in *Science*, June 11, 1943.

We presume to call attention to a significant sentence in the fourth paragraph below: "Careful students nowadays point out that, among lower organisms, co-operation is entirely non-conscious." Resting firmly upon these long-extended, exactly-reported and fascinating investigations by Dr. Allee and his colleagues, inquiry into the significance of the emergence of consciousness in man can and should usefully be pursued. Since individualism and cooperation both appear before self-consciousness in evolution, the question before us is the effect of self-consciousness upon individualism and upon co-operation. The facts accumulated in cultural anthropology demonstrate that simple intensification of egotism is by no means all that self-consciousness has brought about in man. The effect upon his cooperative life is, however, not so easy to define. The distinguished work of Dr. Allee and his common-sense treatment of the observations are solid ground for new advances in the philosophy of human nature. Hence the importance to MAIN CURRENTS of the following paragraphs, which we quote with the kind permission of the author.

"In our laboratory we are making two experimental approaches to the phenomena of biological sociology, and each yields its very different aspect of truth. On the one hand, we have been studying for over a decade the dominance-subordination relations that are characteristic of many social groups. We know from personal observations, as well as from the literature, of nip-orders in fish, peck-orders in flocks of several species of birds and fighting orders in mice. Usually there is one dominant animal which can bite, nip or peck others without being attacked in return. Below it the others are ranked in various degrees of subservience. Similar dominance orders occur among such mammals as rats, cats, cows and men. Social organizations have also been reported with certainty for turtles and for lizards, as well as for many species of birds and mammals besides those which we have observed.

These social organizations are based immediately on fighting or bluffing ability, on individual aggressiveness or meekness, as exhibited in pair contacts between the different members of the vertebrate group in question. Usually the complete social order within a small group is determined during the first few days of contacts; often, among hens, for example, in the first series of encounters. The order, once established, is not readily upset. With fish, changes occur fairly frequently; but with hens, we have observed the same peck order to persist unchanged for as long as a year, and this is a relatively long time in the life of a hen. These social orders are a real expression of crude, person-against-person competition for social status and furnish fair illustrations of the individualistic, egocentric phase of group biology. Here is an aspect of the individual struggle for existence, and as such it illustrates an important phase of the Darwinian theory of evolution.

High position in the social peck order confers privileges. We know that top-ranking animals feed more freely; that high-ranking males of rhesus monkeys, sage grouse and the common domestic fowl have more ready access to females. Low social status may lead to semi-starvation, to psychological castration among cocks, to ejection from coveys of quail; and among many species it forces the low birds into inferior territories. In some cases, high social rank carries responsibilities for leadership or for guard duty; in other instances no correlation with social duties has been demonstrated as yet. Among others, I have published research reports and discussions of many such relationships and need not dwell on them longer.

These studies of individual aggressiveness make one experimental approach to general and comparative sociology. Our second line of attack comes from a different quarter. For more than twenty-five years we have been experimenting with group-centered tendencies which long before my time were called cooperation. Careful students nowadays point out that, among lower organisms, cooperation is entirely non-conscious. In this phase of our study we are investigating natural cooperation somewhat as many other biologists have been concerned with natural selection. Natural cooperation in its simpler forms implies merely that the interrelations

between cells, for example, are more beneficial than harmful for the individual, or that the interrelations between individuals are more beneficial than harmful for the given social group.

I have added to and reviewed repeatedly the modern evidence concerning the existence of such cooperation.

Mere repetition does not necessarily make for acceptance, but a good purpose may be served by summarizing in outline form the types of modern evidence that I have found compelling; the details can be filled in from the extensive literature.

(1) At all levels of the animal kingdom, and under a variety of conditions, there is added safety in numbers up to a given point. Animals from the protozoans to insects or man meet many adverse conditions better if optimal numbers are present rather than too few. There is danger also in overcrowding, but I am emphasizing just now the danger of the population being too sparse. For certain animals this sort of mass protection exists when the organisms are exposed to heat. Mass protection from cold is more common, as is protection from many poisons and from other harmful chemicals. Optimal numbers also protect from ultraviolet radiation, from radical changes in osmotic pressure and from many environmental deficiencies.

Macerated cells of a sponge will not regenerate if too few are present and the smallest embryonic grafts frequently fail to grow when somewhat larger ones succeed. If a natural population falls too low, it is in danger of dying out even though theoretically able to persist.

(2) In keeping with the relations just outlined, many organisms, both plants and animals, are able so to condition an unfavorable medium that others following or associated with them can survive better and thrive when they could not do so in a raw, unconditioned medium.

(3) Certain vital processes are adaptively retarded by increased numbers up to a given density. For example, scattered spermatozoa of many marine organisms lose fertilizing power more rapidly than they do when they are massed together.

(4) Other biological processes are accelerated, perhaps beneficially, in the presence of populations of optimal size and density. Such processes are slowed down both in over-sparse populations and in those that are overcrowded. Cleavage rate in Arbacia and certain other eggs follows this rule. Various kinds of Protozoa show acceleration in rate of asexual reproduction with medium rather than sparse population density, and similar phenomena may well have been a forerunner of

(5) The evolution of the cooperative processes which are associated with sexual reproduction.

(6) Colonial protozoa could hardly have evolved from solitary forms unless the simple colony of cells that remained attached after divisions had shown cooperative powers that were lacking when the cells were scattered singly. The evolution of the Metazoa from the Protozoa was probably based on similar relationships.

(7) Each advance in complexity of metazoan individuals came from the natural selection of an increased ability in natural cooperation on the part of the evolving stock; the greater natural cooperation came first, and then it was selected.

(8) Darwin recognized that a relatively large population is a highly important factor in natural selection. Sewall Wright and others have evidence that evolution proceeds most rapidly in populations of interbreeding organisms that are intermediate in size, as compared with similar populations which are over-small or over-large.

(9) The interdependence of organisms is shown by the repeated observation that all living things, from the simplest to the most complex, live in ecological communities; this is plainly seen in the many biocœnoses, such as those of the oyster bed. Further, the evolution of truly social animals has occurred independently in widely separated divisions of the animal kingdom. These could hardly have arisen so frequently and from such diverse sources if a strong substratum of generalized natural cooperation were not widespread among animals in nature. In nature no animal is solitary throughout its life history.

(10) As with the individual organisms, each advance in complexity of the social life of any group of animals is based on the development of some means of closer cooperation between the individual units of the evolving group.

We have good evidence then that there are these two types of social or sub-social interactions among animals; the self-centered, egoistic drives which lead to personal advancement and self-preservation, and the group-centered, more-or-less altruistic drives that lead to the preservation of the group or of some members of it perhaps at the sacrifice of many others. The existence of egoistic forces in animal life has long been recognized. It is not so well known that the idea of the group-centered forces of natural cooperation also has a respectable history."

Dr. Allee then gives an outline of the growth of this latter idea through European history, from Empedocles to the present day. He continues:

"As was shown earlier, both egoistic and group-centered forces exist in nature and both have been brought under experimentation. I had wondered for years whether we could experimentally test for possible relationships between these two basic phases of animal behavior. Might organized groups of birds, to take one possible instance, have survival values for the group in general as a result of their organization, even though there were no signs of an organized group defense? It will be remembered that such a group organization is based on individual aggressiveness and yields survival values for the high-ranking individuals in the peck order.

I have not yet been able to devise an elegant experiment to test the point. The best one I have been able to think up has been in progress for over nine months. Briefly, we have three flocks of line-bred hens which have been allowed to become organized and are kept as controls. In a similarly housed neighboring flock of the same stock, a new hen is added daily or every second day and the hen which has been longest with the

flock is removed and placed in isolation for twenty-one days or more before she is again introduced into the experimental flock. By that time, apparently, she has forgotten all other hens as individuals; hence the experimental flock is in a state of continual reorganization.

I cannot take time for details and without them you will be unable to make a critical judgment concerning the value of the experiment. An individual can effect the quality of the group life in these flocks; still, despite differences in individuals, the indications are that, regardless of the individuals that may be present, the organized flocks eat more, maintain weight better and spend less energy in fighting, bluffing and pecking each other than is the case with the flock that is daily subjected to reorganization. The strong suggestion is that an organized flock of hens has survival value as a flock which is lacking among an otherwise wholly similar group of hens, that is never allowed to become socially stabilized.

The picture that emerges from the cumulative studies on social biology is one in which cooperations and their opposite, disoperations, both exist. There are both egoistic and altruistic forces in nature, and both are important. The question arises insistently as to which of these is more fundamental and potent. Any such evaluation must be based on both short-run and long-run effects. After much consideration, it is my mature conclusion, contrary to Herbert Spencer, that the cooperative forces are biologically the more important and vital. The balance between the cooperative, altruistic tendencies and those which are disoperative and egoistic is relatively close. Under many conditions, the cooperative forces lose. In the long run, however, the group-centered, more altruistic drives are slightly stronger.

If cooperation had not been the stronger force, the more complicated animals, whether anthropods or vertebrates, could not have evolved from the simpler ones, and there would have been no men to worry each other with their distressing and biologically foolish wars. While I know of no laboratory experiments that make a direct test of this problem, I have come to this conclusion by studying the implications of many experiments which bear on both sides of the problem and from considering the trends of organic evolution in nature. Despite many known appearances to the contrary, human altruistic drives are as firmly based on an animal ancestry as is man himself. Our tendencies toward goodness, such as they are, are as innate as our tendencies toward intelligence; we could do well with more of both."

It would be unfair to try to condense Dr. Allee's applications of the foregoing principles to human society, but the following passages will serve to exemplify the quality of his thought.

"Religion has much to learn from science in objectivity, in willingness and courage to follow evidence fearlessly and even in judging what constitutes valid evidence. Particularly religion can learn from science the advantage of giving up the thundering "thus saith the Lord" in favor of the more humble and essentially more effective summary of "this appears to be the evidence." In short, religion can profit by becoming intellectually more sound without losing for a moment its proper emphasis on the deep emotions of man.

"And science has much to learn from religion. I mean from real religion, not from the pseudo-science of theology which, too often, consists mainly of expert verbal manipulations, related to scholasticism rather than to science.

"Apparently I must take time to suggest what I mean by religion. Religion is ill-served by past and present emphasis on mystical and supernatural improbabilities. To me "God" is a possibly permissible name for the personification of all the best that the human race has been able to think and do and of all the beauty we have created, together with all the natural beauty we can appreciate. Such a conception transcends tradition and mere emotion and has both power, and dignity. While by no means final, this is as close an approach to the truth as real evidence permits at present.

"Science has much to learn from such a religion as I have just outlined, a religion characterized by unselfish living and honest thinking combined with propaganda of the deed. More specifically, scientific men can profit by greater humbleness in the face of our immense ignorance about matters well within our several fields of professed competence. We can also dispense with excessive pride in the usually small discoveries we are able to make.

"We scientists can profit by a frank admission of our awe and admiration for the pervading beauty of the phenomena we study, the charm of which often escapes us because of our preoccupation with details. We will profit by being less certain that the more unpalatable the interpretation, the closer the approach to truth. We will gain in the long run by working in our chosen fields more inconspicuously and quietly. Science, and mankind too, will profit by scientists who live closer to the ideals expressed and practiced by the more devoted men of science or of religion."

Our author brings forward his applications to the present scene:

"Speaking for the moment as a humanist, rather than primarily as a biologist (the two points of view are not unduly dissimilar) there are some implications of this ethical rule as applied to the coming peace which I shall outline. It should be understood that the biological drives toward natural cooperation support the general tenor of the following program without favoring this or any other precise formulation of proposed social action.

"(1) We are not to look forward to punishment for defeated peoples at the close of the present war.

"(2) In under-nourished Europe and elsewhere as needed, administer relief according to ability to furnish it and to need only, not according to politics or boundaries.

"(3) Set up a world organization which will, in principle from the start, and in detail as much as possible, treat victors and vanquished alike. This implies similar treatment of all peoples with regard to:

"(a) Disarmament; if we disarm other nations, we must be willing similarly to disarm ourselves.

"(b) International police; if we subject any major portion of the world to the control of an international police force, we, ourselves, should accept a similar control on the same general principles.

"(c) Curtailment of sovereignty; national governments of powerful, along with those of weak peoples, must discontinue the present policy of determining their own actions in all matters deemed by themselves to lie within the limits of their own national interests.

"(d) Educate all alike for the processes that make for change by the use of peaceful, non-violent techniques. All nations and many classes within nations do and will continue to need such education for a long time to come.

"(e) Behave towards the defeated peoples from the outset more as the English treated the Boers or the United States treated the Filipinos at the turn of the century rather than as our carpet-bag governments coerced the South after 1865 or as England governs troublesome India; and by all means not as Nazi Germany has treated her victims.

"We should not overlook the existence of strong, competitive egoistic drives among all animals, ourselves included. These must be duly considered in any workable plan for a world order. Our job is to keep them in their true place, somewhat subservient to the even more fundamental cooperative, altruistic forces of human nature. They should not again be allowed to steal the international show. These competitive urges can serve mankind well if turned to their original function of driving man in his struggle against his enemies among other species of living things. This struggle is on a global scale, and the members of all countries and races can unite in it. Each can compete against the others, for racial, national or personal pre-eminence in this common task. Competitive drives for worthy ends have real strength. I have only to mention the word priority to a biological audience to make the point.

"Consideration of these egoistic drives brings us back again to the hen coops from which we started. Man, like so many of his fellow vertebrates, has a strong tendency to set up social orders among individuals and between groups. In the past, man has made repeated trials of informal and finally of a more formal world organization based on dominance and subordination. There have been the hen-like peck orders of the early world empires to which the atavistic Nazi system is an attempted return. Until recently these rigid peck orders were being replaced by the more democratic dove-like give and take of territorial orders, in which, certain empires aside, each nation had the peck-right over all comers in its home territory. With nations, as with many territorial birds, when space became crowded, the dove-like peck dominance changed to the more despotic peck-right.

"Today, a major biological contribution to the discussion of a post-war world is that, solidly as the peck-right system is grounded in animal behavior, it is not the only pattern for human action that biology has to offer. Other animals show a somewhat stronger tendency toward essential cooperations than they do toward struggles for egoistic power. Man can, if he chooses, focus on his innate drives toward cooperation and attempt to set up a new order based primarily on some altruistic pattern such as I have outlined. The task will be easier since modern biological teachings in these matters resemble many of the social doctrines of the ethical religions.

"The difficulties in the transition from the power politics of the international peck order to a system based on international cooperation are impressive. The change is possible. If the attempt is deferred for the present, it will most certainly come in the future and I prefer to start toward the future now. If we again turn toward the solutions of the past, we face the disheartening certainty that power politics have never avoided war for more than a few decades and will not avoid war again. We are aided in working toward a more rational goal by the fact that, one or two nations aside, there is a general and strong mind-set toward peace throughout the peoples of the world. Our task as biologists, and as citizens of a civilized country, is a practical engineering job. We need to help arrange so that the existing trend toward a workable world organization will be guided along practical lines which accord with sound biological theory. And we must remember always that in such matters the idealist with the long-range view is frequently the true realist."

Psychological Classes in Society

Correspondence

A CORRESPONDENT, prompted by reading *Arithmetic or Revolution*, by Arthur Dunn, has essayed a description of American society in terms of psychological groups which express either authority of spiritual insight, expediency or dictatorship. The class society here described is thus stratified according to ethical standards, our surveyor opening his analysis with the declaration that "all economics rest on ethical values. The sounder the ethical values, the better the economics," and continuing:

"Now let us make three patterns.

Pattern A is governed by *the Authoritative Voice* that appeals to conscience, reason, and logical thinking.

It includes all socially minded leadership, all people actuated by a keen sense of justice, all insistence upon free utterance, all tolerance, first consideration of the good to the many, loyalties first to ethical principles. Under this pattern we find the best of the motivation of what we call the *New Deal* (which was inevitable

whether we had Mr. Roosevelt for leader or not), all of the best in present world leadership, a high content in the present war effort. Right now it is amazingly weak in those fields where it ought to be strongest, in the fields of education and organized religion called the church. Industrially it is spotty, has many advocates who practice social rather than profit motivation. It does not stress organization knowing that its power is in proofs resulting from its own practices. Much of it is submerged and constitutes the backbone of democratic government where the best of the people quietly pursue their ways. Its strength is greatly underrated by those who come under Pattern B.

Pattern B is governed by *the Voice of Expediency* that appeals to the urge and the surge of the moment, impulses not consciously constantly governed by ethical or logical considerations.

It includes all those who practice lip-service to Pattern A but betray it under slight pressure of immediate gain to themselves. It includes all motivated by material profit-seeking, all "pressure-groups," their leaders and members, all blind loyalties to unethical organization practice, all disinclination or stubborn unwillingness to face true facts, all insistence that it have license to pursue greed and selfishness (under insistence that such is freedom), all hypocrisy, all fanaticism based on unlogical thinking. It blankets an uncomfortably large portion of the press, education, and the church. It feeds on exploitation of the unthinking or the uneducated. It becomes raucous under criticism. It puts high values on organization, knowing that under organization it creates blind loyalties to socially irresponsible organization leadership. It has not the slightest conception of the issues of the war but loudly claims that it does. It includes all escapists who dodge severe realities by running to ivory towers of art or academic worlds. It thrives on the misuse of words. It is incapable of being shocked or moved by cruelty, high injustice, racial intolerance, though it condemns such exhibitions when seen safely at a distance. When they come close at hand it looks the other way, refuses to examine a serious situation and will not tolerate punishment of any of its own members who may be directly associated with it. (Detroit race riots). It now being revealed that under what it has loudly condemned as Communism (a scape goat for anything offensive to its hypocrisy) there is too much that belongs under Pattern A and it no longer affords a convenient label for disparagement, it turns, utterly and willfully misapplying the meaning of *fascism*, and makes fascism the convenient label. (Many who were shouting communism at socially responsible movements a few years ago are now shouting fascism. We approach a political campaign in which the term will be loosely used against the best of the New Deal efforts.) Industrially or educationally it either asserts loud and noisy leadership or rests comfortably in self-complacency and smugness.

There is a certain amount of flux in this pattern and members who see the error of their ways are constantly moving toward the higher Pattern A, many also think themselves into positions where they see they are being hoodwinked. Actual experience rather than argument is a strong factor here.

Economics, under Pattern B, become unstable and chaotic. The major cause of economic unrest, unemployment, social abuse, demagogy, political corruption is in this pattern because of indifference to needs for readjustments it creates.

Persistence under this pattern, inevitably, will lead to Pattern C.

Pattern C is governed by *the Dictatorial Voice* that demands self-surrender and submission and deliberate rejection of all socially conscientious values.

It includes, in this country, all political corruption, boss rule, deliberate attempt to thwart law, perversion of justice, special privileges as against the law, deliberate suppression of truth, news, or fact (anywhere in any field whatsoever), stifling of criticism, dishonest advertising — there is entirely too much of it — deliberate commercial exploitation, all organized crime and everything connected with it, all hidden (class B) affiliations with organized crime, gang rule, anti-racial advocates, anti-racial demonstrators (the certain consequence of the advocators), deliberate block movements devoid of conscientious responsibilities, rackets and racketeers. Industrially it has unsuspected converts to fascist ideologies who believe these ideologies can be introduced harmlessly modified. Such converts are in the hands of those who will deliberately do anything that will reduce the country to a state of economic chaos in order that they can emerge to powerful vantages of open control. All of those who habitually adopt the ideological technique of blaming their own faults on others, the pot-call-the-kettle-black technique of fascism, are in this group. This is manifest in others than anti-racial channels. Educationally those who were openly advocating most questionable philosophies and points of view, have been submerged because of the war. They now serve the war effort, but have neither changed their hearts nor their minds.

Solidified to a point of power to which those governed by the voice of Expediency would immediately yield, we would, under this pattern, have something, indeed, to contend with. It might gain ascendancy for a period of great cost to the nation, until Class B learned from bitter experience and yielded the majority of its members to Class A. 1944 is ominous with a possibility that this pattern will gain political control. It has elements that would not hesitate to turn our allies' guns against us, in the end. Political jealousy is a high ingredient of this pattern. This pattern absolves itself under the guise of patriotism in the war effort and finds ready excuses when needed. Instance: Last summer I saw chalked on a freight car: "After we have licked Hitler we will see to the Jews." (A Swastika was chalked on a local sidewalk at about that time. That is the way it began in Germany.) Under this pattern may be included those who deliberately misuse the word fascism. Those who have not troubled themselves to look at it and its results, and insist, because they have no real sense of ethical values, that it is a purely political manifestation with purely economic causes, belong in Pattern C. Economics, under this pattern, annihilates itself. Ethical principles are abolished."

E.P.K.

WAR AND EDUCATION

Book Review

WAR AND EDUCATION, by Porter Sargent. Porter Sargent, 11 Beacon Street, Boston, 1943. 478 pages & Index, $4.00.

WE CALL ATTENTION to a volume which must surely surpass in importance to educators any other record, published in 1943, of the closing of an epoch by the war.

The author of this book is the publisher of the *Handbook of American Private Schools* (now in its twenty-seventh edition), a biologist, and as much the scourge of ordinary thinkers as he is the delight and the enlightener of all those who are not afraid of new educational ways to more adequate thinking. This will serve to describe the manner of the man. He himself has provided (pages 9 to 14) a digest of the book's contents:

1. "How the abstractions 'war' and 'education,' so much in people's minds, cover a multitude of sins. How our present systems of education make possible our wars. 2. How our thoughtways and institutions remain unadjusted to power and technology of today. How the struggle for political power and the resistance to change have brought, instead of the economic abundance possible, war and waste. 3. How improved communication has accelerated unification of the nation, building of a common ideology, centralization of political power and nationalizing of education. 4. How educators, uninformed of inevitable trends, deaf to warnings, enmeshed in their own confusions, were unprepared to interpret events or to meet the approaching crisis. 5. How our teachers and leaders, to avoid the pain of adjustment, have resisted change and tendered to turn back to the past. How the disturbing ideas of outsiders produced ferment. 6. How education, conservator of culture and social systems, resists reform, and hopes prove futile. How the church, preaching ideals, must work for its own perpetuation. 7. How the curriculum came to retain obsolete subjects once useful. How this piecemeal knowledge without interpretation results in sterile and acquisitive scholarship. 8. How filling the mind with meaningless facts makes fertile ground for misleading propaganda. How youth is frustrated and prepared for aggression, delinquency, and adults for intellectual failure and degradation. 9. How education is controlled in other countries. How financial institutions, through foundations and the dead hand, control the policies and practices in our universities. 10. How, in the art of governing, force and the threat of starvation may be replaced by new techniques in control of communications and consequently of mental content and emotional reactions of peoples. 11. How in turning from the supernatural to the natural man becomes increasingly conscious of God's wonderful world and finds new explanations bringing greater understanding which may displace hate, waste and war."

So much for the man and the theme. It is necessary, however, to focus attention upon the way this volume is put together, a way as original as are writer and attack. Each chapter, including even the brief introductory portions, consists of solid treatment of hard facts, followed by notes citing multiple sources, which make these facts much harder. The quality of the goods may be exemplified by a passage on page 237, in the caustic chapter entitled: "We Teach What's Left":

"Ask by a Swedish economist what young America is taught about economics, the late Professor James Harvey Rogers of Yale, author of 'Capitalism in Crisis,' replied, "I laugh to say they are still taught a brand of economics hardly distinguishable from that of John Stuart Mill. And what will probably be funnier still to you, economics is frequently taught as a body of doctrine and of principles to be learned and retained.

Science in the schools? Of course. They offer 'general science' badly and briefly taught, and in physics and chemistry barren laboratory work devised half a century ago for college entrance. Few schools recognize biology, which as taught leaves the impression that it's something loathsome like dissecting a frog."

We thus have at hand a book which puts before us the evidence that we have not yet come to the center of the problem in our schools and colleges, and shall not until we orchestrate modern knowledge in terms of values. The point to keep forward is that the evidence is presented in its original sources, and the ground cleared for the job of construction. The teacher, or school — or college official, who fails to make this book his guide, is guilty of conspicuous waste. F.L.K

SENSATION AND PERCEPTION

Book Review

SENSATION AND PERCEPTION IN THE HISTORY OF EXPERIMENTAL PSYCHOLOGY, by Edwin G. Boring. The Century Psychology Series, Richard M. Elliott, Editor. D. Appleton-Century Company, Inc., New York & London, 1942. x + 644 pages, $5.00.

WHAT IS KNOWN of sensation and perception as a result of experiment and thought from 1600 and Kepler, to 1940 and the phenomenologists and gestalt psychologists, is set forth in this, the second volume of a trilogy on *The History of Experimental Psychology*, by Edwin G. Boring of Harvard. The first volume (1929) bore the title and dealt with men and schools. The present book on sensation and perception in the history of experimental psychology is to be followed by the last, on feeling, emotion, learning, attention, action, thought, "

the reception of this second one should justify it." In response we say at once that for our part the standard of compression, proportion and insight set in the present book makes us eager to see the task completed.

Other reasons influence us. Dr. Boring regards himself as a layman. If we allow him this modest illusion, we then have in him that all too rare variety of professor, the detached and good humoured amateur, so often able to illuminate a subject which the heavy-handed professional crushes to an uninviting pulp. We would enjoy reading a history of the psyche and the soul in experimental psychology done by the man who writes thus in the preface of this present work: "There is a debt I owe to Society-at-large, which has finally, giving up a fruitless struggle to have me spend my summer vacations in Maine, left me in a happy peace working on this book in Cambridge during Julys and Augusts. A studentless month in the summer is worth five of Harvard's winter hurly-burly. Sometimes I fear that, if Harvard does not give up trying to turn itself from an Institution of Learning into an Educational Institution, we may have a generation of professors whose duty it will be to disseminate information which they have not had the time to acquire."

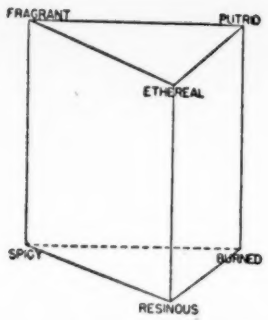
A third of the present book is devoted to physical vision. Another third goes to hearing and tactile and organic sensibility. Of the six hundred pages only twenty-six are assigned to taste and smell. Dr. Boring asks why these two latter senses have so little history. Part of his answer is that not enough work has been done on them. "Another theory is that smell and taste are so unimportant in human civilization as not to interest men. If human culture could have been founded on a dog's life, smell and not vision would be the great chapter of sensory psychology, and Helmholtz would have written three huge volumes of a *Handbuch des physiologischen Geruchs*, as well as a *Die Lehre von den Geschmacksempfindungen als physiologische Grundlage fuer die Theorie der Geschmackslehre*. . . . The real reason for the undeveloped state of the experimental psychology of smell and taste must be that their stimuli have not yet been discovered."

This state of ignorance, and the publication of this admirable survey, brings up an interesting question: Do we perhaps know so much about sight, and latterly hearing, that we have once more lost the woods among the trees? Is it not a good moment, such a work as this in hand, to stand back and take another look at the whole jungle? The present reviewer is but an amateur reading the work of a (self-styled) layman, but like any onlooker he thinks complacently he sees what the players miss, even though he doesn't know a hawk from a handsaw, or a limen from a c.p.s. (Anyone else as ignorant may consult the index, too: a first-class index).

Looking, then, at the whole, it is significant that the senses operate through different media. Touch rests upon the solid state of matter, and is activated best of all by solids in movement over the skin, or liquids or gases simulating the solid state: as when a stream of water rushes under pressure from a hose. (Feeling of heat is, after all, a detection of motion also, molecular, in this case). Taste has to do with liquids and solutes. Smell is preeminently the sense for the qualities of gases. Thus we have a tactile sense for each energy level of matter. In such terms, what of hearing? It is a peculiar dual sense; noises are one classs of sounds, and can be communicated through all manner of media, and tonal hearing is (in terms of effect upon the psyche) another and operates best in familiar still air. If we contrast the effect of hearing under water the sound of a distant banging together of rocks, with the effect of a hundred musical instruments in a passage of Tchaikovsky, we realize how hearing is at one extreme a mere tactile sense and at the other serves to convey to us another psychological order of experience altogether. With vision we enter definitely upon a supra-gaseous medium which has entirely new properties, namely, the constants and the harmonies of the new physicists which take up the tale of sound at its superior end and run the account up from relatively simple fourier wave-forms to the accounted complex wonders of Bessel, Legendre, and Laplace functions, as discussed in our volume III., page 20. This circumstance that hearing leads from simple percussive tactile response to oscillations in solids and fluids up to the edge of the physical world, and there sight, in a new medium, takes over — taken together with the accounts we have nowadays of harmony in Nature — suggests that hearing is a borderland sense, lying between the tactiles (touch, taste and smell) and sight, and somehow participating on both sides the border between material and radiant states.

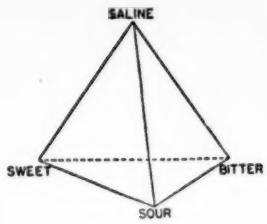
With vision, we enter definitely upon a supra-gaseous medium which has entirely new properties, namely, the constants of the Relativists, starting with the velocity of light. Sight is thus the opposite of the tactile senses, and hearing is between two worlds. And now we have Dr. J. B. Rhine keeping at us with figures which tend to suggest that other senses may be working at a threshold level somewhere alone, and yet related to vision (when he calls it clairvoyance) and yet as directly perceptive as touch (when he speaks of telepathic ESP). Certainly if something of this kind proves out presently it will have to be located in the domain revealed in slit-like fashion by sight, since sight alone of the senses operates wholly in a world of ether wherein are available the properties ESP inquiries demand. (For some onlookers the sight of the telepathists rushing in to fill the vacuum created when the Relativists explained away the ether, has indeed a touch of retribution about it!)

However all this may in future appear, it is significant that we perceive a graded series of sense media in which taste and smell are near the bottom, and are primitive not only because they are so much more keen in lowlier creatures than in ourselves, but because the medium in each case is at the molecular and atomic border where matter half reveals and half conceals its raw relations with space-time. For these are called chemical senses, and systematic efforts to relate smells and tastes to the periodics of the chemical elements, to the benzene ring, and the like, have resulted in tantalizing probabilities just beyond our firm grip of understanding. Furthermore, the most satisfactory assignment of properties detected by smell and taste are those made by Henning, and they turn out to have a metrical relationship called the smell



SMELL PRISM: HENNING (1915)

The six principal qualitative classes of odors are shown. Intermediate qualities lie on the edges or in the surfaces.



TASTE TETRAHEDRON: HENNING (1916)

The four principal qualities of taste are shown. Intermediate qualities lie on the edges or in the surfaces.

tetrahedron and the olfactory prism (see above).

Somewhere buried beneath all this business of the senses is a half perceived over-all order, which peeps out (perhaps, leaks out, smell and taste being the subject) at us through smell and taste, because smell and taste operate at the level where, in the chemical elements, the systematic of matter, the kinetic geometry of quanta and the like, show themselves. We suggest that we know so little of taste and smell, and they are so apt for betraying structure properties of matter, that we glimpse through them the order missed in vision, potent enough in tonal hearing but too readily explained superficially by the structure of the ear — as if sense perception were merely mechanical.

The present stage of history of sensation and perception in experimental psychology shows us once more that progress in science depends upon relations with philosophy. We undoubtedly stand at that moment in history when ideas are undergoing profound changes. The publication of Dr. Boring's work is thus happy in timing. It gives us proportion at a period when we shall need it for the advances ahead. Those advances must surely include better knowledge of man's constitution, especially the true state of affairs about mind and body. If sensation is just adjustment evolved from environmental impact over the ages, the discovery of whatever grades of order may be at work in Nature will be gradual, since it will have to wait upon sensory evolution. But if sensation and perception are the results of inner and outer matched developments, the outer lagging in time but nevertheless responding, then the important thing for progress in understanding sensation and perception will be to try to get a new grip upon the deep anatomy of Nature, and re-read our sensation data against that causal nexus. In either case these lively and authoritative works from Dr. Boring, so well illustrated, admirably indexed and with chapter bibliographies, are books to be consulted for years with keen satisfaction. F.L.K.

HOW DOES SIGHT WORK?

Book Review

VISION: A STUDY OF ITS BASIS, by S. Howard Bartley; with an Historical Perspective by Edwin G. Boring. New York: D. Van Nostrand Company, Inc., 1941. xv+350 pages, $3.50.

A BOOK of conspicuous clarity on the physiology of vision by Dr. S. Howard Bartley of Washington University, St. Louis, comes opportunely as a companion text to the study of sensation and perception by Dr. Boring, reviewed elsewhere in this issue. Dr. Boring himself writes an historical perspective to the subject as introduction to Dr. Bartley's book. "The treatment of the material," says the author in his own preface, "is a resultant of two things: an attempt on the one hand to select from the psychology of vision the material for which the present day neuro-physiology has something to offer, and, on the other hand, to discuss certain related visio-sensory phenomena for which physiology must provide an answer. This answer seems to be awaiting development, not so much of added details in physiology, but possibly a new kind of fact and a different viewpoint." What might that new kind of fact be? Is the new viewpoint coming to realization?

Dr. Bartley brings forward the "contribution of current electro-physiology to the understanding of the problems of sensation and motor activity in the intact person." This is a gain in technique, because at last we may be done with misleading views of sensation and perception which have so often come into biological sciences as a consequence of isolation of parts from wholes. This technique may lead to the "new kind of fact" required to solve the following fundamental problem to which the author returns at the conclusion of his lucid survey: in the retina and nerves of the eye there is a provision for visual acuity and (contrary to this isolation phenomenon) there is interaction to produce the effect of wholes. How can there be simultaneous interaction and insulation? For this Dr. Bartley proposes a field theory, to which many biologists turn nowadays also for explanation of orderly organic growth. Visual perception has been successfully described in terms of vector-fields: Shape as a function of a vector field means that perceptually sight is not random. What of the physiology of sight, workings of retina and nerve? The need is to establish the existence of the same or like field in the neural domain itself, as a physical fact parallel to the perceptual fact.

Here in this exceptionally clear handbook of the physiology of vision we are brought to the uttermost frontier of a subject which begins for European science (as Dr. Bartley reminds us) with Euclid, who himself calculated the resolving power of the eye: "his conclusions compare favourably with the best measures of

visual acuity we have today." On this frontier we, however, have knowledge Euclid did not possess: the exact geometry of the sense-cell, both gross and chemical constitution of the rods and cones; and some knowledge which suggests that a general humoural factor is present to heighten and unify retinal activity. Behind this triplicity of rods, cones and humour are others: transverse, amacrine and ganglion cells; connection by three nerve lengths; and three types of energy discharge. Thus detailed knowledge of interlocked (oddly enough, usually three-fold) entities are at hand, and the terminal components (rods and cones) turn out to have significant forms. In the cones are seen a spherical oil drop, an ellipsoid element, and a paraboloid refractive globule. The rod, typically cylindrical, has a refractive disk in place of the cone's oil drop, and sometimes an ellipsoid and even a paraboloid element. Around these, in both rod and cone, is a muscular (myoid) element, which acts to lengthen or shorten the whole sense-cell body.

Thus the very first element in sight, the true receiver of the light wave, is a minute body packed with forms which are, in fact, shaped on conic sections. As the ear is constructed upon principles of stringed musical instruments, so the eye appears to be constructed upon geometric principles down to its smallest details: spheres, ellipses, parabolas, cylinders. Perhaps the new kind of fact and different viewpoint called for by Dr. Bartley is to be found in thinking of the eye as a microcosm modelled upon the ideal principles of the light-world macrocosm it is thereby exactly suited to report upon? Electrophysiology gives us knowledge of functions of organs in the intact person; perhaps we would do well to regard significant parts of sense-organs, such as rods and cones, as intact parts of a cosmos which (it is rumoured) is constructed upon non-Euclidean principles that turn out to be but strange new varieties of conic sections. Some new thinking certainly needs to be done to make meaningful place for all these recurring instances of repeated orders and patterns, such as powers and roots in proportions and those natural logarithms (see page 24 of the present work), found in all manner of natural systems. E.J.

NEVER TOO LATE

Conference Comment

SCIENCE, PHILOSOPHY AND RELIGION, Third Symposium, Edited by Lyman Bryson and Louis Finkelstein, 3080 Broadway, New York, 1943, 438 pages, $3.00.

AN INSTITUTION called The Conference on Science, Philosophy and Religion in Their Relation to the Democratic Way of Life, Inc., had its general public inaugural meeting in New York City in 1940. The admirable and timely purpose implied in the name was well implemented at that first annual session, when scholars of first rank discussed what might be done so that religionists, philosophers and scientists might come to speak the same language of ideas, as far as words allow. Many observers were cheered with new hope when Albert Einstein declared to the Conference his conviction that the participants should study the reign of universal law, and besought his colleagues to put aside the idea of a personal God; and because Jacques Maritain (in the Catholic interest) joined up, in effect, in the first and constructive proposal made by Mr. Einstein, though he demurred on the second and negative demand.

But hopes were chilled when it appeared in the 1941 session that the managers of the Conference had made no arrangements to pursue the unifying studies thus brought under notice by two of the most eminent men of our times. Conferring was again limited to the reading (and some discussion) of new papers, many of high interest, but just more papers, after all. The Conference became even more verbal and less realistic at its third, and latest, session, in 1942. It was therefore no surprise when a sub-committee announced to the New York newspapers failure to arrive at substantial unity of thinking, other than a few generalities such as the worth of the individual. It was reported that the future of the Conference is in doubt; that "men of affairs" would be brought in to help — what kind of affairs? Deep regret and strong criticism have been voiced. The *Humanist*, Spring, 1943, featured vigorously expressed opinions as to cause of failure.

The managers of this admirable undertaking are busy men and women, and perhaps we should be merely grateful that they have at least tried. But the circumstances of our times are too grave to allow our anxiety to be smothered by simpler feelings of good will. We are entitled to ask whether it is not the duty of the steering committee to alter the workings of the Conference? Simple abandonment will only deny this country an institution that could be of solid worth in shaping an American ideology and in giving leadership to education. That must be done sometime, somewhere in the United States. The Conference is not doing this job, and thus it occupies a place without functioning properly in that place. In effect it stands in our way, just because its papers entertain and distract us from the main business, very much as the greater part by far of our newspapers consume time of readers and actually prevent the citizen from being properly informed.

Since the sub-committee has admitted failure, and we voice dissatisfaction, it is proper to make constructive suggestions.

The Conference requires a continuously functioning secretariat to set out the main outlines of that grand integration of knowledge Dr. Louis Finkelstein spoke of at the very first original public session, and solid work

needs to be done toward this year by year. There is no real problem in making headway along such lines. Every Conference speaker must be aware (let us say) of the second thermal law. But does he know the other two, or the two or ten dozen additional general principles of chemistry and physics which modify the pessimistic meaning usually read into the second thermal law? If the retort be made that these details have no bearing on the worth of the Conference, it is proper to point out that until each participant acquaint himself with the general concepts which rule the minds of each of his colleagues, there is no hope whatever of attaining common ground. The members must be as willing to re-educate each other on facts and laws as they are willing to exchange opinions. If the Conference members speak and write each year in an increasingly invigorating atmosphere of common knowledge they would then make a common cause in a natural manner.

What would that cause be? It is plain that the nation is afflicted by a rapid decay in ethical standards which were tied up with the concept of a personal God, personal rulers of secular states, personal factory ownership, personal headship by fathers and mothers of families, and personal power to dispose of one's own labour. The state of ethical decline in this country is obvious and frightening and there is the clue. We have only to see how many Congressmen betray the honour of their Congressional immunity, recall the nature of some financial deals in the twenties, observe the smearing which goes on in the press to estimate the risks we run today. Even if a government can now and then perform better than its citizens or its power groups, it cannot legislate morals which schools and colleges do not evoke. Many of the members of this Conference are educators. They surely must realize the need to work out ethical norms suited to the new needs of society?

What are those needs? We now have impersonal science, impersonal government (Mr. Roosevelt's prestige, to the contrary, notwithstanding!) impersonal and often monopolistic ownership of means of production, group disposal of labour and the rest of the social complex. For this we need ethics rested on natural, impersonal law, united with spiritual or moral law — but law. By putting the force of natural and moral law behind ethics the existence of personality is not denied. Men are persons, and get their freedom from obedience to natural law, and lose it when governments and tyrants break natural and moral law. But if the Conference proposes, before it goes on to advocate new practices, first to solve all philosophical problems, including discovering by mere exchange of opinions at what range natural and moral law are one (which is the task involved in settling on the place of personality amidst law), then the Conference unconsciously arrogates an amazing degree of wisdom to itself and meantime denies humanity the half-loaf of natural law it could at once have to go along with the half-loaf of respect for moral law still remaining.

The Conference could sound amist the strident uproar of our times a powerful note of order and harmony in Nature for mankind to learn of, and obey; and a philosophy suited to an impersonal democracy could be stated, if the steering committee and the principal personnel were sufficiently impressed with the revelation of order's supreme place, as revealed through recent developments in knowledge. If they took this direction, the world would have cause to bless them for their insight and industry, whereas now we can only thank them for their partial foresight and a courage which have not borne proper fruit.

But it is never too late to mend. In the name of the nation and of mankind we appeal to these men to reorient their work and to start with new courage, realistic purpose and world-wide vision commensurate to the times and to the task they have assumed and surely have no right to lay down. The Symposia they publish, including the present volume, will then be not only stimulating reading but stirring records of staunch and selfless struggles toward a new era. F.L.K.

BASICS FOR PHILOSOPHERS IN BIOLOGY

Book Review

BIOLOGICAL SYMPOSIA, A Series of Volumes Devoted to Current Symposia in the Field of Biology. Edited by Jaques Cattell. Vol. VIII. Levels of Integration in Biological and Social Systems, ed. by Robert Redfield. The Jaques Cattell Press, Lancaster, Pennsylvania, 1942. 240 pages. $2.50.

THE EIGHTH VOLUME of Biological Symposia, edited by Robert Redfield, is devoted to *Levels of Integration in Biological and Social Systems*. It is the most recent in the series reporting the conference held in September, 1941, at the fiftieth anniversary of the University of Chicago. The whole, under the general editorship of Jaques Cattell, provides authoritative guidance to the philosopher by bringing into uniform, handsome, and readable treatment, summary reviews of the present state of fact and opinion in the great science of the living kingdoms.

The present volume, says Dr. Redfield, (p. 1) "had a double origin. Representatives of the Division of the Social Sciences at Chicago University planned a program of papers having to do with some of the more comprehensive and underlying aspects of society. The program was to emphasize three borderland fields of recent research interest — borderland from the point of view of the student of human society. In the first place there ... the disposition in recent years for students of p... ...ive society on the one hand and of modern society on the other to study their subjects in common terms: the

significant event here was the rapprochement of anthropology and sociology. In the second place recent investigations of the social behavior of monkeys and apes had made a fresh contribution to the understanding of the origins of human society. In the third place the rapidly developing work of students of mammalian and bird societies had aroused the interest of sociologists and anthropologists. So the social scientists arranged for papers to be read respectively by an animal ecologist, a student of the social behavior of monkeys and apes, an anthropologist, and a sociologist known for his understanding of modern urban society. The essential idea was to present human society as an example within a class, societies, and to have a look at some of the resemblances and differences among examples of the class.

In the meantime biologists at the University were making ready a program of papers concerned with the ways in which parts are organized into wholes in life forms. Here again there was a wish to represent new frontiers of research and to consider special problems in wider contexts. The problem of the appearance of multicellularity, questions as to the mechanisms of the integration of parts of an organism into the whole organism, problems presented by the study of populations and of the organization of populations into entities greater than and different from the component individuals — all these problems had had recent attention with significant results. There was, furthermore, a disposition to recognize that the integration of parts into wholes within an organism, and the intergation of parts into wholes within a population or social aggregation, were not entirely separate problems, but that they could be considered in relation to each other, and together. So there resulted a program of seven papers, beginning with a consideration of the evolution of the metazoa and concluding with a report on the social relations within certain avian and mammalian aggregations."

The contributors, thus, marshal in outline the data which ecology has to contribute to the now generally accepted belief that human society is an organism constituted of particles (people) more widely separated than the particles of a volvox colony, and hence to be regarded as an advanced form of the org, Child's neutral word for any whole. Throughout the discussion runs the assumption that the human org is both homologous and analogous to lower orgs, which start in inorganic substances, rise up to living masses, (animorgs) and to mankind, an epiorg, made up of individuals, each an org. R. W. Gerard observes on page 85:

"Man as an org is selfish, individualistic, and dominated often by the old brain and its emotional attributes. Man as a unit in the epiorganism is altruistic, cooperative, and depends on the functioning of his new brain and its intellectual attributes. But the subordination of the old by the new is not yet sufficient. Human nature is evolving but is doing so less rapidly than is the epiorganism in which it expresses itself. Altruism is not yet generalized to the full group, to the whole human epiorganism, but only the larger subordinate groups based on race or religion or state. As the units given adherence have grown, so have the conflicts between these units become more massive and devastating; and perhaps still other wars on a still greater scale (written in September, 1941) are to be encountered on the path to world integration. But ultimately this integration must be achieved and conflicts of the present type become impossible.

The new brain, the cerebral cortex, is evolving continuously and greatly under the influence of education, which profits by cumulative social achievement; the world is ever more at our individual doors, and cooperation is being generalized to larger and larger groups; mankind as a whole will become an integrated cooperative unit; and the ultimate future of human society, however dark it may look to the contemporary sociologist, or even to the historian, appears in the eyes of the biologist, sighting down the long perspective of organic evolution, as bright with hope."

The mature knowledge of the distinguished contributors in these symposia constitutes a pool of today's biological information on the subjects discussed. They form a broad and secure base upon which the new concepts must soon arise. The object has been to assemble ordered fact. The next stage should be to gather psychologists and physicists into a conference with biologists to erect the frame of a contemporary philosophy. Man's capacity for generalization and abstraction, his ethics, his self objetification are invariably functions of time. However much the specialization and speed-up of nerve excitation in him may be the physical basis, the significance lies in the time sector as is witnessed by superiority of the cerebrum with its memory, imagination, and the like. Hence the properties of time-space as a continuum have to be brought into the picture. We have noticed nowhere in this volume (which unfortunately is not indexed) a reference to union of time and space which is commonplace in physics. If biologists are to assume that physical data are the chief means to explain man and society, then they are bound to advance with the physicists. What we want to know from another Chicago conference is whether the known properties of space-time and energy will not explain consciousness, aesthetics and tool-making just as matter, space and time serve to explain in some measure the animal side of sociality in man. F.L.K.

INDIA'S CASE

Book Notice

INDEPENDENCE FOR INDIA? Julia E. Johnsen, The Reference Shelf, Vol. 16, No. 3, The H. W. Wilson Company, New York, 1943, 292 pages, $1.25.

IN THEIR SERIES of manuals called The Reference Shelf, The H. W. Wilson Company has put out the finest available record of fact and opinion on the subject, *Independence for India?* It is the work of an expert in precis and abstract work, who is also equipped with insight and sympathy for both Britain and India: Miss

Julia E. Johnsen. A reader of this work will realize that India is the scene of the supreme test of the times: If the promised transfer of power be made to India without toying with the dangerous idea of breaking up India to please Mr. Jinnah and his small party, one stout deed for future peace will have been done. Relations with China and Russia too will then be very different for Britain and the United States, if the transfer of power to India is accomplished without that atmosphere of distrust and of intrigue which accompanies the acts of the present Secretary of State for India. Language cannot be too strong which is to characterize pronouncements which say (on the one hand) that India can be free anytime she likes and with any government she likes; and which says (on the other hand) that Britain shall provide the basic principles for that freedom, among them the right of any number of provinces to stand out from the arrangement, and that the so-called treaties with the Princes are sacred documents — when they are not treaties, in most cases, and most of the Princes are not properly ruling sovereigns. If there is any part of the world where principles should come into play, it is in the relations of Britain to India. Miss Johnsen's compilation is an essential for the person who wants to have authoritative knowledge on one of the chief scenes of the present world revolution. F.L.K.

THE FREEDOMS AND THE ARTS

Book Review

ART AND FREEDOM: A Historical and Biographical Interpretation of the Relations Between the Ideas of Beauty, Use and Freedom in Western Civilization from the Greeks to the Present Day, by Horace M. Kallen. Duell, Sloan & Pearce, New York, 1943. xxvi & 1006 pages, two volumes, $6.50.

IN THESE two volumes, Dr. H. M. Kallen, professor of philosophy at the New School for Social Research, publishes his long-preparing close study of the inter-relations of the artist and his art with society, a two-way reaction, here treated in terms of the two variants of freedom which have been the alternating concern of European man: freedom to obey the state, represented by such writers as Hegel and Spengler, and freedom to obey personal conscience, whether or not socialized.

Dr. Kallen is particular in disclaiming that he has attempted "a history of aesthetics." He has achieved a more important kind of historical treatise upon art attitudes (and a reference work besides, the index being a first-class job), which constitutes one of those summary works which signalize the closing of an age, and even assist the closing by clarifying issues.

His subject matter is persons, schools, philosophies and principles of art; the approach is "empirical, personal and piecemeal"; the result is comprehensiveness and in many passages vivid re-creation of important moments in the past. For example, Ruskin's era is brought to life, though with less sympathy than some of us might like to see applied to a man whose fealty to art had to be lived out in that time and place in Europe most remote from beauty. The Victorians do seem pathetic to us; but we in turn are likely to look lunatics to those a little later in times ahead. This, however, is a small matter of opinion and mood, first-person-singular, not taken to diminish our satisfaction with a work of grand proportion and enduring usefulness.

Set in the midst of this survey of the splendor of human devotion to beauty, in all its urgent terms of use, fulfilment, romantic need and the rest of the indefinables of creative drive, is a close analysis of the essence of a third freedom which (some of us think) is the achievement ahead which this war masks and accelerates. That passage opens (Vol. II., p. 611) with an account of the first serious and sustained work done in modern Europe upon the relation of art to natural law and particularly to life as art's subject matter. This is the oldest of themes: life burgeoning betwixt matter (as the art material and hence medium) and consciousness (the artist as creator-critic), — Lakshmi, the consort of Vishnu, as beauty, between Brahma as material cause and Siva as creator-destroyer.

His account of the European fresh start of this movement, which seeks to maintain the unity of head and heart, is made by Dr. Kallen with Alexander Bain and James Sully, but the emphasis is doubtless rightly placed on G. T. Fechner. Here the noble Greek union of art-emotion with scientific mind was fleetingly returned to Europe by way of psychology. Fechner's work, based on the simplest elements of the linear Golden Section (that property of line in which the shorter cut is to the longer as the longer is to the whole: a:b=b:a+b) and ranging up through surface proportions, to forms, and into a variety of psychological elements, released a force in the Western world providing the psychology of art there with its heritage of old data and a start in the creation of the new. Fechner, it is somewhere on record, owed much to some knowledge of Indian attitudes toward life and beauty, but this, the East, is beyond Dr. Kallen's scope.

He puts us enough in his debt by a survey of this impulse, unifying art and science, running in his pages up to Volume II., page 788. These passages are followed by cubism and other schools, wherein were substituted personal unconscious abstracts (sometimes psychotic) for Nature's abstracts. Dr. Kallen provides, in his discussion of art metric, a study charged with insight into the works of Ross, Jay Jambidge, Samuel Coleman and others re-

cent in the great tradition, and a particularly entertaining chapter on Matila Ghyka in his rational and also in his more fevered phases of inspiration, derived from Pythagoreanism as it was and as M. Ghyka would have it. All this is set alongside the great shifts in emphasis and circumstance in western society, until we are brought down to the mass production tide which swept so brutally over Woodrow Wilson's New Freedom and is now licking and pounding its wild force upon Franklin Roosevelt's quaking fill, the New Deal: John Dewey (toward the end of Dr. Kallen's record) standing like some old oak out of a living past in the midst of the flood.

Hence we have in this work the study we need to have at hand as an account of art in relation to the soul and to life in Europe. It comes along just prior to the impending re-union of the world on terms which are sure to enforce, through India, China and Russia, a more general interest in man's constitution in relation to Nature and natural law; and hence Dr. Kallen has well served a resurgence of interest in that third form of freedom, neither personal alone nor state-confined, but freedom as an aspect of the law-abiding cosmos in which the creatively new is momently born not of the decaying past, but full-armed from the eternal. **F.L.K.**

MAN THE MEASURE

Book Review

MAN THE MEASURE, A New Approach to History, by Erich Kahler, Pantheon Books Inc., 41 Washington Square South, New York 12, N. Y., 1943. 700 pages. $5.00.

A NEW and promising publishing venture has appeared in this country, Pantheon Books, Inc., 41 Washington Square S., New York City. The director is Kurt Wolff, who formerly had been the head of the Kurt Wolff Verlag of Leipzig and Munich, and of the Pantheon Casa Editrice in Florence. Both houses worked on an international basis. The Kurt Wolff Verlag published some 2000 volumes of poetry, art, fiction, philosophy and drama. Pantheon Casa Editrice published a monumental series of art books, the first attempt to create an international corpus of books covering all fields and periods of art history. The series was published simultaneonsly in Germany, England, France, Italy and Spain.

The principal avowed object of Mr. Wolff and his collaborators is the publication of books which will interpret into all domains of experience the meaning of consciousness, that unique mark of man. This implies the defense of values, due regard for things of the spirit, and quality as against quantity.

Man The Measure by Erich Kahler is in the current list of Pantheon Books and it may be taken as representative of the publisher's intent, no less than the author's talent. Analytical treatment is out of place in reference to *Man The Measure*. The whole thesis must be examined, as Albert Einstein points out: "For Kahler, history in the true sense of the term deals exclusively with the conscious shaping of human life and human relations. Far from imposing his own tendencies and goals, he has tried to elucidate them from the facts of the past. His manner of illuminating human striving and acting in the past never degenerates into pedantry. Everything is subordinated to the general plan, and it is the very variety and richness of his material that has engendered a strict economy of expression and led to a precision of style which give this work the character of a gripping report."

The best service we can do to reader, author and publisher to describe Kahler's attitude toward the nature of man is to extract a digest from the book itself (pp. 11-16):

In order to clarify the question: "Is there a clear *distinction between man and animal*, has man any special characteristic?" Kahler deals with the three theories which have so far tried to point out this "special characteristic": the theological theory, which conceives of man as of divine origin; the rationalistic theory, which centers attention on reason as the distinguishing mark; and the biological or naturalistic theory which assigns to man no more than a certain place within evolution, thus admitting of a difference in degree only but not in kind. Neither of these theories are held satisfactory for very conclusive reasons. What really distinguishes man from beast is: "Man's faculty of overstepping his own being . . . with what is understood by the term 'spirit.' The functions of this faculty are twofold. In the first place, it enables and induces man to discern, and to detach himself from, an outward, contrasting being which is recognized in its own distinct orbit . . . spirit is at first the faculty of detaching and discerning a definite non-self from a definite self. It is the ability to objectivate and to subjectivate.

"This act of discerning and detaching, of objectivation and subjectivation (or self-objectivation) is the prerequisite for the second move, for the actual transcending of the limits of the self, for entering into a conscious, super-corporeal relationship with the non-self. In acknowledging a non-self as a distinct entity, man puts himself into the place of the other being, he becomes capable of vicarious feelings and thus transcends his own limits. Limits cannot be transcended before they are recognized. Thus spirit . . . is the very essence of a being concerned with more than itself. . . ."

"Man's transcending, his overstepping of self, is more easily recognized when not only [illegible] methods but his purpose differ from the animal's, as . his distinterested pursuit of art, philosophy and science . . . the term spirit as we use it is not meant to carry any value overtones with it.

"Spirit emerges from the totality of the human organism. . . . Spirit is at first a new force, a new impetus

in man. By its increasing activity, it develops into a perfected faculty of the human being. Finally its accumulation of objectivations comes to constitute an entire sphere of life, comprising various fields such as religion, art, philosophy and science . . .

"Accordingly, spirit does not mean something outside or above man, in either the popular or the theological sense; it is not to be confused with spirits . . . especially not to be confused with reason. . . .

"Spirit — man's faculty of discerning and transcending — manifests itself in three ways, each essentially and exclusively human: the first is what we shall call existence, the second is *history*, and the third is that special demeanor and psychic attitude which is rightly termed *humanity*. . . .

"*Existence* . . . is the basic procedure of discerning and transcending . . . Man lives in awareness of himself, of a constantly conceived, constantly felt whole of personal life . . . he lives outside as well as inside the instant. His awareness of himself is a form of discerning, his living outside himself and the instant is a form of transcending. Together they enable him to alter instants and merge them into a continuity, a conscious life. . . .

"From the same roots as existence grow *history*. . . . [Man] becomes capable of drawing conclusions from the past to the formation of the future . . . to adapt his life to ideal, universal human goals.

"*Humanity*, a specific attitude of man towards his fellow man, is also based on man's faculty of discerning and transcending . . . This leads to the sublimation of erotic impulses; . . . to love in the full sense of the word, . . . to all kinds of spiritually established, disinterested relationships, . . . to the concept and the postulate . . . of an actual human community.

The important thing to remember is that the whole development from the animal to the highest human goals is simply a development of the primary faculty of discerning and transcending, those acts of spirit which make man human. Spirit as a value derives from spirit as a fact, an impulse."

It is necessary to keep forward one critical point. Kahler refers to the oft-quoted work of Koehler with apes who were offered food out of reach and tools in the form of sectional jointed poles which they successfully put together and secured the food. This is no proof of objective judgment but only of reason, as Kahler pertinently points out. The making of a tool would be, but not use. Koehler's experiments only strengthen conviction that self-consciousness is a crucial event in evolution and an advantage peculiar to man. As a belief in spiritual values is closely bound up with this as yet experimentally unchallenged fact, we press the point, thus already made inferentially by our author. "The repertory of gestures and vocalizations of a species is rather definitely fixed by hereditary determinants," as C. R. Carpenter points out (Biological Symposia, Vol. VIII, p. 204, The Jacques Cattell Press, Lancaster, Pa., 1942). "In short, animals have consciousness of kind, in the sense that they react to their kind. They also have conciousness of association, of the ingroup and the outgroup. They do not have consciousness of kinship, because kinship, while an objective fact, requires abstraction for its recognition. Abstraction involves ability to symbolize, in other words, speech. It is this specifically human faculty that has lifted kinship out of its accidental role in brute societies and constituted it into the basis, or at least one indispensable basis, of human societies." (A. L. Kroeber, ibid. p. 206). G.K.-F.L.K.

TIME AND THE UNIVERSE

Book Review

TIME AND THE UNIVERSE, A New Basis for Cosmology, by F. L. Arnot. Australian Medical Publishing Company, Limited, Sydney. 76 pages. Price not stated.

IT IS SAFE to say that a remarkable development in contemporary philosophy is embodied in this book of modest physical dimensions, concerning the most spacious of modern man's speculations: *Time and The Universe*, by F. L. Arnot. The author, unfortunately for the philosophical world, died while the thesis was going through the press, in 1940. He was but thirty-six years of age.

The book proposes a solution for the problems which persist in the several attempted unifications of the physics of the cosmos, or stellar great world, with the physics of the atomic fine world. The present proposal, rested, of course, upon currently accepted physical measurements, approximates closely to the cosmical concepts of Indian philosophy which were arrived at by quite other and not at all generally understood methods. The work is thus another of those precursors of the coming union of East and West. We shall insert a few of the Sanskrit terms in our brief description of Dr. Arnot's book.

The author calculates his way to the conclusion that there are two kinds of time. There is one for the atomic fine world, *t* time (Kala) according to which the universe of matter or atoms, had a beginning and will have an end and is thus finite. There is another scale for the gross planetary and cosmic world T (tau) time. This belongs to the Absolute (Parabrahm) and is, with Dr. Arnot and the Hindus alike, without beginning and without end. Thus we have precisely the Indian idea of stellar systems which awaken to activity (Kalpa, "orderly goings on") and subside to quiescence (Pralaya, "beyond place," or devoid of centers), inhering in the one reality.

The two times are connected in this thesis by a logarithmic relation, and the standard of length and mass have the same value in both time scales. "The red shift of nebular spectra is found to be due to a decrease in

the velocity of light in t-time, and the formula obtained for the degree of red-shift as a function of the distance of the nebula is in excellent agreement with the experimental observations. There is no recession of the nebulae, for the theory gives a static universe having a constant radius of 2×10^9 light years, a mass of 2.55×10^{55} grms. and a present mean density of 1.9×10^{-28} grms. /cm^3. The number of elementary particles in the universe is found to be 2.31×10^{79} and the present age of the universe is given by the red-shift formula as 2×10^9 years. Finally the theory leads to the uncertainty relation and thus links quantum theory with cosmological theory. The theory, which in no way conflicts with the results of any physical experiment, is developed without any appeal being made to the general theory of relativity, but general relativity still, of course, holds in our ordinary tau-time, as do also our usual laws of mechanics and equations of motion."

Thus is proposed a solution for the dilemna posed by Sir Arthur Eddington in *The Nature of The Physical World* (p. 83): "But the difficulty of an infinite past is appalling. It is inconceivable that we are the heirs of an infinite time of preparation; it is not less inconceivable that there was a moment with no moment preceding it."

Albert Einstein's general theory of Relativity was born in the turmoil of the first part of the barbarous wars of this century. It shattered, for re-making, the world of physical science. It would be fitting if the fabric of that shattered system of classical physics had the beginning of its re-making in the midst of this second war. Time, of the t variety, will reveal whether tau time contains this possibility. F.L.K.

MODERN PHILOSOPHICAL AIDS

Book Notices

MATHEMATICS DICTIONARY, Glenn James and Robert C. James, The Digest Press, Van Nuys, California, 1943. 273 pages, plus 46 pages of tables. $3.00.

TWENTIETH CENTURY PHILOSOPHY, Living Schools of Thought, ed. by Dagobert D. Runes; Philosophical Libr... New York, 1943. 571 pages. $5.00.

IN THESE TRYING TIMES of war and the close of an age, a few publishers are quietly endeavoring to provide guidance in dictionaries and summaries for those who have felt the world of thought was getting quite beyond them, as space-time, chromosomes, genetic factors, individuation fields, many-valued logic and other strange new entities and terms appeared in a flood. Among the invaluable works at hand is Messrs. James' dictionary of mathematical words and topic phrases in what is essentially a condensation of basic principles and formulae in arithmetic, elementary algebra, plane and solid high school geometry, college algebra, mathematics of finance, trigonometry, analytic geometry, and differential calculus. The appendix affords tables of denominate numbers, compound interest tables, American mortality experience tables, a table of logarithms of numbers, of trigonometric functions and their logarithms, differentiation formulas, an extensive table of integrals, the Greek alphabet, and a very complete list of mathematical symbols.

It will be immediately evident that the needs of the student, the general inquirer, and the reader ill-equipped in mathematics who is compelled to enter that field for some special purpose, are all well served. The work is admirably printed, and handsomely illustrated.

Upon this foundation a further service may be rendered philosophers and mathematicians of advance fields of astrophysics and of atomics by the issuance of a second volume dealing with variant properties of hyperspace, both purely theoretical and practical, non-Euclidean geometries, topology (analysis situs) and a variety of subjects which are even more difficult to get under unified survey than the contents of the present volume. A rich harvest is ready at hand in studies such as *Geometry of Time & Space*, A. A. Robb, Cambridge, 1936, and an eager public is ready to use such guidance. It may seem a bit greedy to ask so much more of authors who have rendered this signal service, but the present work is of such solid worth and so unique (we believe) that the reader naturally is inclined to turn to the same source for further help.

Twentieth Century Philosophy, which we owe to a second publisher and editor, is also of high value. It would be good to see a considerable enlargement of this category of books, in which authorities summarise recent and contemporary gains, in preparation for a considerably revised educational curriculum, long overdue in the United States, at least. We may define this needed literature as that which puts emphasis upon man and the environment at the mental and soul levels, compensating for the over-accentuation of body and environment of previous recent decades. Husserl himself is a, perhaps radical, instance of the new state of mind, but really all modern developments in the philosophy of electronics, relativity, and the like are clearly part of that which is likely to be a source of long-term interest. Mathematics plays a great role in this, and semantics and linguistics generally take a growing part. The principles of the arts also are now coming forward as important ingredients of philosophy, not as pure aesthetics, but as a reaction from over-concern with private abstracts, the personal unconscious, phantasy and the like. That reaction is conjoined with a great variety of discoveries in the sciences (for example, through the microscope) which have immediate art-meanings, and the devising of instruments in the sciences so sensitive that they require a touch and a judgment quite equal to that of the artist. Publishers, authors, and editors, such as Messrs. James, Runes, The Digest Press, the Philosophical Library, who prepare the way for a revival of metaphysics in a new sense, are of large importance in our world, where activities at Schenectady and Wood's Hole are frequently revolutionary in philosophy. G.L.

ARITHMETIC OR REVOLUTION

BEYOND VICTORY, Edited by Ruth Nanda Anshen, Harcourt, Brace, New York, 284 pages, and index. $3.50.

ARITHMETIC OR REVOLUTION, by Arthur Dunn, Guild of American Economists Inc., New York, 1943, 103 pages. $1.00.

UPON SUPERFICIAL ACQUAINTANCE the first of these two books may appear to have very little to do with the economic confusions and inequities of our times which make our wars what they are. But readers acquainted with previous books edited by Dr. Anshen have learned to expect that essays assembled will form a meaningful whole out of their individual distinction. She has turned to persons who are equipped to speak with acumen out of experience: Jawaharlal Nehru certainly is entitled to address himself to The End of Imperialism, as he has spent much of his adult life a political prisoner of the British government of India. But the editor has done more: she has laid out a united front in which the writers take up strategic positions. The book is planned, in short, as well as edited. Herein, as everywhere, plan and design is in the intellectual air, ready to supplant the random and accidental which was foisted upon a reluctant society in the days of dying crass materialism.

For the editor's purposes, the writers had to be those who could help in "evoking the consciousness of society to the necessity of finally establishing here on earth international community and international law. This book is a plea to man to know himself and the conditions of society, and to be worthy of and demand what is right for himself and consequently for society," as she puts it on the opening page of her own definite essay. "It is a plea for the recognition of all the potentialities of man and his culture; a plea for the recognition of the locus of his problem in universal human experience. The center of disturbance must be discovered. The concrete origin of the question must be determined . . . . . for we are confronted with a problem not of language but of life itself, and of man's freedom. Freedom is man's right . . . . . But freedom does not consist in the objective existence of power. It consists in the possibility and in the right to use this power for desired ends." She goes on to make the familiar and important point about science as a frustrated aid to freedom, in words which become the motif of an essay in the body of this book on freedom and science wherein the President of Harvard briefly and candidly addresses himself to practical proposals about changes in patent laws, educational opportunities equal for all, and kindred problems of science and society in the postwar world.

In short, here are experienced people discussing their experiences, tracing our troubles to the Hawley-Smoot Tariff Act, "the deadly economic malady afflicting the world . . . . covered up by the billions in private loans floated by foreign borrowers in the United States" (Mr. Wallace in his essay on The People's Cause), composing as a whole a handbook of the highest value upon the theme which Carl J. Friedrich quotes in his essay on War and Government from Carl von Clausewitz: "The theory which makes absolute distinction between war and peace is false. War is an overt expression of covert tensions and conflicts which exist in every stable and peaceful social situation. In war, things that have been hidden become revealed." It is in these useful terms that we have James T. Shotwell on The Nature of Peace, Carl J. Hambro on World Organization, Hu Shih upon Force as an Instrument of Law and Government, to name only a few of the twenty contributors gathered in a book of lasting value, but which does not offer, and is not intended to offer, a solution of the special tensions of our times which are, in their overt form, this war.

Mr. Dunn's stirring and simply written book should be read by everyone, certainly by all who benefit from Dr. Anshen's gifted company. For Mr. Dunn's readers discover that the special causes of our wars have been identified and a process has been devised to resolve them. Dr. Anshen's own distinguished colleagues would do well to acquaint themselves with Arithmetic or Revolution, the initial and ground-breaking publication by a new group, the Guild of American Economists.

The Guild addresses itself to the main issue, which can be stated simply and briefly: Ordinary political, constitutional, common, and statutory law are the result of centuries of trial-and-error discovery of man's nature and his nature as part of society and of Nature as a whole. It is thus a projection of the properties of man and of the world. Law has declared freedom to be the truth and need of man, especially in recent years. We know that political law and natural law are parts of the same body, law in general. But well within the last forty years a new situation has arisen, heavy mass production techniques, which have promised mankind the economic part of freedom to go with the political part thereof. The world, however, is playing with laissez faire, which was the control-economics of the mercantile, not the mass production era. We have therefore to find the natural laws which lie under mass production as an agency of freedom, and we have to find them as fast as possible. Are we to jettison free enterprise (meaning here true free enterprise and genuine competition, as Dr. Conant, Mr. Wallace and others mean it), to get to this goal? If so, how shall we be able to say we have defended freedom? There is only one way to defend freedom all down the line, and that is by finding out by conscious effort as great a body of natural law for mass production economics as we have a body of natural moral law for the political part of freedom. To this the Guild has addressed itself.

Mr. Dunn's book is devoted to the alphabet of this subject, and hence is a must for every American. He shows conclusively that deficit financing, outrageous and impractical extremes of income, and the like are very bad arithmetic: that without distributing buying power, venture capitalism cannot survive (to say nothing of finance capitalism). He has thought his way through.

He shows that war is a barbarous and costly way of making jobs which mass production societies have not yet made in peace time. This is the truth as of today, no matter what war once was.

Every thinking man knows that mass production arose during the first world war, its meaning was denied by the governments of the world after that war, the depression brought the crisis home, and governments ever since have been trying to postpone a settlement by palliatives, until this war came along to mask the issues once more. But they will not be denied afterward. The distribution of buying power, and all that attends this problem, including lessened hours of labour and better conditions, are inescapable demands.

Such is the plain and plainly written thesis of Arthur Dunn. As an introduction to the now solvable problem of our times, this is a book of highest worth. And with the studies of the Guild of American Economists following on after Mr. Dunn's opening and ground-clearing inquiry, we may feel at last that something effective can be done. Corporations can get knowledge of the natural laws of mass production economics. They can make policies that fit the facts and rest on nature, thus anticipating what society is bound to attempt anyhow through government, because society and government themselves arise from natural laws. If industry pursues the right road it will retain its freedom of action and a dynamic society will result, because we are *acting* upon the free organic basis that every writer in Dr. Anshen's book has in mind, and which many of them refer to explicitly in variant terms, albeit without defining how we shall proceed to *achieve* that state.

There is only a pair of alternatives in view of Mr. Dunn's proposals, which rests upon the thesis of the Guild, for which his work is a pioneer: go back to laissez faire and dream we are in a mercantile age and not in mass production, until we wake up with a bloody revolution on our hands; or consciously, instead of unconsciously and by violence, take the road which a combination of knowledge and experience clearly points out. History is a dynamism and man has seen the vision of economic security and of peace. Thus the only hope of men who would be free is to study consciously the natural moral law basis for mass production and create an economics which rests therein. Mr. Dunn makes it clear that industrialists and management can do this job, if they will, if they do not merely content themselves with herding together in defense groups which are unable or unwilling to make the studies required.

Mr. Dunn's book is a clear statement by one American who means to do his part to end war by thinking his way through our problems. No one can be other than stirred with hope by discovering that there is an alternative to revolution, and that it is rooted in simple arithmetic. From this point, established by Mr. Dunn, it should be but an easy step for economics to assume its proper place in the metric of that society, Beyond Victory, which will retain its freedom as well as its dynamics, to which Dr. Anshen has so ably directed thought.

F.L.K.

THE ESTHETIC JUDGMENT AND THE ETHICAL JUDGMENT

Book Extract

Norman Foerster in THE INTENT OF THE CRITIC, pages 65 and 66, edited, with an introduction by Donald A. Stauffer. Princeton: Princeton University Press. London: Humphrey Milford, Oxford University Press. 1941. pp. 147. $2.50.

"WE, IT SEEMS, are critical; we are embarrassed with second thoughts, we cannot enjoy anything for hankering to know whereof the pleasure consists; we are lined with eyes; we see with our feet; the time is infected with Hamlet's unhappiness — 'Sicklied o'er with the pale cast of thought.' These are the words in which Emerson, a hundred years ago, characterized our modern age, an age of criticism.

It is sometimes remarked that there is something wrong with an age which goes in predominantly for criticism. Unhappily there are many other reasons for thinking that there is something wrong with our age. That is precisely why we need criticism. Our modern age, bent upon a return to Nature, has more and more prostituted the humanities — the civilizing forces of religion, philosophy, literature and the arts; and now the totalitarian states, employing with sinister effect the one great creative force of the modern world, science, are intent upon completing the return to Nature, the return to the primitive. These are the times that try men's souls, to see whether we still have souls. These are the times that try men's minds, to see whether we can clarify the phrases we glibly repeat to summon up courage, phrases such as "preserving the values of civilization," "preserving the democratic way of life," "preserving the dignity of man." Without a keener and more earnestly affirmative criticism than we have had, we shall not even know what we wish to preserve, or why it is worth preserving.

Because there is nearly everything wrong with our age, the kind of criticism which can render the greatest service is a general criticism, taking into account the whole of our civilization. Granted that our civilization is highly complex, still we shall have to deal with it in the light of a few simple ideas firmly established. The greater degree of specialization — the more men are sundered from each other by their preöccupations — to the same extent the need grows for some kind of intellectual and spiritual clearing-house. I refer to the kind of criticism, ranging into diverse fields and vitally connecting them, exemplified in the nineteenth century by Carlyle, Ruskin, Arnold, and Emerson, in the early twentieth century by Chesterton, Babbitt, and More, and in the present day by Jacques Maritain and Lewis Mumford. Such men are not merely critics of literature, they are critics of the foundation of our whole culture."

RECENT ITEMS

Shackling the Machine

An Article by Charles Babbitts in Advanced Management, January-March, 1943, is likely to prove historic. The author proposes a complete reversal of the relation of a worker to his machine: henceforth the operator is to be linked to the machine by photo-electric cells in such a manner that his own rhythms, prompted by music, would control the machine. Therefore, instead of keeping up with a dead-beat system and feeling perpetually frustrated and shackled, the worker would be engaged in what is essentially a dance expression, and the machine would function as a percussion instrument such as cymbals, which he would play as a part of music he hears.

Mr. Babbitts quotes Eric Farmer (see Industrial Psychology, Norris S. Viteles, Norton, N. Y., 1932): "1. All time and motion study must be undertaken solely in the interests of lessened fatigue and never in the interests of increased production. When a proper system is carried out, increased production will probably result, and in all cases which have come under the writer's notice has actually taken place; but if increased production is made the object of the experiment the true issue becomes confused, and what purports to be a scientific investigation degenerates into a process of speeding-up. 2. The underlying principle of motion study is rhythm and not speed. We must look upon the best set of movements as the easiest set and not the quickest set."

Mr. Babbitts defines the sense of rhythm in terms employed by C. E. Seashore, in his work, Psychology of Musical Talent (Silver Burdett, N. Y.), and then shows that ballistics of human movements and bodily momentum form, in conjunction with the sense of rhythm, a powerful psychological complex which cannot be frustrated with impunity. Exact illustrations follow, and near the end of the article the writer says something trenchant and plain, "of the controversy concerning man's enslavement to the machine. One group underlines the despotism of speed imposed by a machine, while the other points to increased production and lessened fatigue due to the automaticity of the machine. Although both sides possess an element of truth, progress lies neither in the abandonment of the machine nor in subservience to its will. One improvement will be the 4 or 5 hour day. The other, to subject the machine to human rhythm." Mr. Babbitts then makes his novel proposal that the machine should follow the worker's tempo and will.

Throughout the article the supreme place of psychological rights of workers is kept to the fore. Indeed, the whole journal, speaking for the Society for the Advancement of Management, Inc., 29 West 39th Street, New York City, marks an end to inhuman and fissive relations in industry. The reader is prompted to look forward to a revolution in American life; and he is also prompted to pray that Congress will have courage and knowledge enough to do some thing more than pass piecemeal legislation, but will instead see the shape of things to come and anticipate and ease the changes into our national system. For the forces at work will not be denied, as they arise from needs so deep-seated in human nature that no conservatism can prevent the outworkings. Congress is up against human nature in terms of universal law. In this case it is mankind's need to dance. History shows us that when mankind is denied its festive rights, and hours and strength in which to enjoy these rights, it pushes aside obstacles to them as would a flow of lava to its course. It will be better for us if we arrange for fun in factories and the dance of machines instead of inviting political troubles and dancing in the streets.

Male and female adolescent dance addicts (jitterbugs and hep-cats) are not a freak of the times. The dance is an immortal institution. In primitive life it has always been religious and meaningful and workable: corn dances, hunt dances, sea-chanties, weather dances, mating dances.

We are doubtless upon the verge of finding out how to convert machine labour into a modern equivalent of one or two of these folk-dances. We may, in fact, expect presently to have music written for factory purposes: The Nut-Threading Suite, arranged for press-drill by P. Steamoshenko and The String-Bean Sonata for violins and gang-cultivators with a dinner-horn obbligato suitable to use in shallow plowing. Indeed, some music we have recently heard seems, by exact anticipation, to have been written with an eye to the future rather than an ear to the present. U. Z.

The International Bill of Rights

"The International Bill of Rights project is the Institute's contribution to the solution of post-war problems," writes William Draper Lewis, Director of the American Law Institute opening his report to the members thereof on the discussion of the project at the Annual Meeting, May 12, 1943, issued in June. "The advisers include not only American authorities in the field of constitutional law but also jurists, political economists, and specialists in related fields representing the major cultures of Latin America, Europe and Asia." We do not, however, observe any Hindu names in the present report, and in view of the remarkable polity in basic Indian law, the prescripts of Manu, and the vast future importance of India when free, we hope continued omission is not contemplated.

President Pepper said that the Institute is trying to find out "whether there are universal cravings, universal human needs, which can be crystallized into rights." Professor Percy E. Corbett of the Institute of International Studies at Yale, and member of the American Law Institute's committee of advisers, reported that "the idea of social rights — the right to education, to work, to fair pay, to organize for industrial purposes —

is no new thing. I have a list of the countries which have in their constitutions guaranteed some or all of these social rights. They are Czechoslovakia, Estonia, Finland, Germany, Greece, Ireland, Italy, Liechtenstein, Lithuania, Poland, Portugal, Roumania, Spain, the Union of Soviet Socialist Republics, Vatican City, Yugoslavia, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, El Salvador, Uruguay, Venezuela, China, Netherlands East Indies, Commonwealth of the Philippines, Sarawak." The Committee met thrice in June and sub-committees are going on with the task all summer. Progress will be reported from time to time. J.A.S.

Mind Operating on Matter

THE MARCH, 1943, issue of The Journal of Parapsychology contains the first public account of experiments initiated at Duke University into the direct effect (if any) which mind may have upon the movement of material objects. It was in February, 1943, that the fall of dice was there first recorded statistically, with and without attempted psychic influence. Twenty-four finished papers each discussing a series of studies are now reported on hand. Others await analysis by various experimenters. The supposed influence of the thrower's desires upon the final position of the dice is called the psychokinetic effect, or PK, or, to go with the inquiries into telepathy or extra sensory perception, ESP.

The throwing is done in many runs by mechanical means. Hence, as in the inquiries into telepathy, the experimenters have again issued themselves a heavy handicap at the very start. For if telepathy is a fact rooted in some sort of emotional energy, then the use of the emotionally uninteresting ESP cards is bound to reduce the psychic drive; and in the case of the fall of dice, not only is the gambler's urge likely to be absent in the laboratory, but dice, mechanically thrown, are not likely to pick up a charge of the thrower's psychic energies. These are important consideration, for, (if there is anything provable in this connection) it must involve some sort of rapport between the human psyche and the so-called inanimate object.

Nevertheless, the first report claims that positive results have been obtained above chance fall. And the outraged feelings of a great many psychologists and many more physical scientists over positive reports on telepathy will be as nothing compared with the despair which the report on psychokinesis will certainly elicit.

Whatever the outcome of the inquiry and debate on PK and ESP, this much is certain: the most obdurately material of the sciences, physics itself, offers, however unwittingly, ground for explaining these facts (if such they prove to be) even if they be awkward customers! The matter is worth pursuing.

The oldest attitude in the world toward man's place in Nature is some form of animism. When Europe, in isolation, created material science, it rejected every form of animism, and science has consistently turned back other invasions of modified animism into any of its departments, even into psychology. Hence the stunting of such schools as represented by Fichte and Fechner, and the withering away of such enterprises as the Society for Psychical Research. All this, however, occurred during crass materialism. Today the very science, which most vigorously rejects all superphysical reality, physics, itself, imposes on us a notion of matter so diaphanous in structure that there is a proportion of many thousands to one of space to stuff, taking matter as particles. Meantime field-concepts have entered biology, and once more the concept of self-consciousness as an atom has come forward, and indeed the universe according to some physicists can be reduced to consciousness and fields of electromagnetics. Between science providing rational shadows, and psychology restoring animism by way of the laboratory, there may be little intellectual choice, and ancient emotional impulses are likely to lead mankind to try the old medicine as against the new. If therefore the material scientist wishes to deal with the threat which he holds psychokinetic inquiries represent, his course is clear: he has to restore some flesh and blood to the one-eyed monster lately promoted to exalted place. Psychokinetic effects will stand on their own factual merits, if any. If they prove to be fact, difficulty will arise if we have no philosophy adequate to frame them.

A friend of the present writer was saying half-seriously the other day that there are some things so much against the whole spirit of science that one is not to believe them even if they are true! This may be very well for someone who has got to the root of things in his own way and to his own satisfaction. But the many are not in this position. They are going to use anything that is handy to revitalize the warm faiths they once had. If the fall of dice will do it, much as they be against gambling, the dice will be taken up. The cure for threatened restorations of superstitions is a more fully rounded out philosophy which gives animism its proper place in the whole. Then we need fear no dark ages of superstition. Neither shall we fear new facts. T.Y.

The Cosmic Constants

IN HIS 1935 volume, New Pathways in Science, Sir Arthur Eddington reduced the constants of physics to seven in number, which he calls the "primitive constants." These are (p. 231): *e*, the charge of the electron, *m*, the mass of an electron, *M*, the mass of a proton, *h*, Planck's constant, *c*, the velocity of light, *G*, the constant of gravitation, λ (lambda), the cosmical constant. He then reduces these seven to four pure ratios.

Sir Arthur has been making a continued and close study of these simplifications for many months, and in Nature, May 1, 1943, he discusses a constant of about 10^{39}, common to several aspects of the cosmos:

Ratio of electrical to gravitational attraction is 2.3×10^{39} to 1; the time light takes to travel across the diameter of an electron is 1.25×10^{-23}, and the (assumed) time the galaxies would take to reach their present position if all started from the same point simultaneously and travelled uniformly at present

speeds of motion is 1,800 millions of years, the ratio is 4.5×10^{39}; the number of protons in the universe is 1.54×10^{79} (Eddington), and its square root is 3.9×10^{39}; the age of the universe in years is 10^{39} (approximately), so when the universe is 10^{40}, the number of protons will be then $10^{39} \times 100$. Sir Arthur concludes that evolution will still be going on. G.L.

A Noble View of Science

Lord Teviot opened a lively discussion on agriculture, diet and science in the House of Lords on October 26, 1943, with the observation, "Your Lordships are well aware that the hospitals and similar institutions are full to overflowing, and this has been the case for many years," and proceeded to sharp remarks about the increasing incidence of cancer in humans, the problems of crop and stock diseases, the enormous expenditures on so-called cures, and the fact that only one-fifth of one percent is spent on research leading to prevention. The ensuing debate shows the value of the House of Lords as a cultural chamber. We extract the following passage from the speech of the Earl of Warwick:

"We must possess self-knowledge and we must practice a humble and really statesmanlike method of approach to this subject if we are to get anywhere. It is no use continuing with these charming theories and political devices which are to-day perplexing the world with ideas for our post-war fashion of living. Man is made up of two things — his body and his soul which comes from God. It therefore follows that unless he can do away with nature, unless he can invent some methods of nature, then surely he must try to marry the laws of God and the laws of nature instead of perpetually trying, as he does to-day, to keep them at variance. Scientific knowledge, as was pointed out by Lord Geddes, may be a very dangerous thing. I am afraid that our generation has been inclined to lack the wisdom necessary to apply scientific knowledge. I read a paragraph in a newspaper the other day which recorded the declaration of a scientist that summer milk dried by a certain chemical process was quite as good as winter milk taken directly from the cow. That is really a half truth. What the scientist really meant was that with the limited information available to modern bio-chemists, and according to a toy scale of measurements which these chemists employ, the constituents of these two milks of which he spoke, when compared, appeared to be equal. Now it is a very funny thing that the general public are more impressed by that sort of scientific remark than by almost anything else. Whether it is because they are frightened by the long and high sounding terms used by the scientists, or whether it is because they do not live long enough to hear the scientists of the next generation refute the theories of the scientists of their own generation, I do not know.

May I recall to your Lordships some simple doggerels in this connexion. The first one, which is by Pope, runs:

"Nature and nature's laws lay hid in night
God said: 'Let Newton be!' and all was light."

About 300 years later another poet — in this case I believe Sir John Squire — wrote:

"It could not last; the devil shouting 'Ho!
Let Einstein be,' restored the *status quo*."

Now, if the experiments of this worthy man of science had been carried out, and the results had been satisfactory to his theory and his idea of the synthetic improvization of nature, can anybody prove that in the next generation or in the generation after that, or in the third or fourth generations, evil results might not appear which would mean death to the race? We have astonishing belief in our little test-tube marvels and in our ability to mould ourselves in what we appear to think is the image of God, and it is frightening to me to think that 99 per cent. of the so-called civilized population of this world are more likely to pay attention to a newspaper article of this nature than to use common sense and humility, and to realize the almost certain improbability of our poor little civilization having been chosen as the one to upset the whole cosmic world."

The Pavlov Controversy

The 1936 Congress of Physiologists in Moscow was dedicated to the memory of Pavlov, whose investigations of conditioned reflexes were such a powerful stimulus to behaviorism and such a strong distorting influence upon recent philosophy. Out of a speech at the Congress by P. K. Anokin, a polemic developed between Anokin and Palatnik. In the Arkhiv Biologie Nank, 1940, 57, 79-109, Anokin wrote upon The Problem of I. P. Pavlov's Heritage and Foreign Neurology, described as follows by R. R. Hilkevitch of the Institute for Juvenile Research in item 1022 of Biological Abstracts. American scientists will recognize another instance herein of the acknowledged place of political philosophy in scientific work in Russia. A like influence is often apparent in the United States in some branches of science, though seldom acknowleged.

"The author attempts to show the significance of analysis and synthesis in the development of the study of the conditioned reflex. His conclusion that there is a need for developing a physiological methodology which would lead to a more systematic presentation of nervous behavior than reflexology has done, met a challenging paper by Palatnik. The author refutes Palatnik's criticisms and charges him with a superficial grasp of dialectical materialism. A critical discussion of reflexology and gestalt psychology is presented, as well as the problem of whole versus part in considering the facts of neuro-physiology. The contributions of Goghile, Lashley and Bancroft are discussed from the dialectical point of view. The value of labelling foreign neurologists, especially Goghile, as idealists, is questioned, and the need for experimental proof prior to drawing any conclusions as to the incorrectness of anti-scientific contentions is insisted upon. The importance of evaluating all facts in the light of Soviet scientific progress as a whole is emphasized." A.H.P.

Toward a World Religious Revival

Not only is the overwhelming majority of all mankind seeking a technique for *individual* expression or religion, but we are most earnestly seeking the techniques for *cooperative* action along religious lines in the creation of mutual good-will among all men.

In the field of economics we have left behind us an economy of scarcity in which there was never enough to go around and have entered an era with an economic condition of obvious plenty where more than enough for everyone can be produced. We are in an era of mass production and of economic abundance, but we have not yet found the economic key to mass distribution and consumption.

A similar situation exists in the world of religion, and there may be a more significant relationship here than mere similarity. The masses of humanity have become, as they always do in times like these, intuitively religious. The seeds have been sown, the grain has grown, and the harvest is in sight; but we have failed in the world of religion as we have failed in the world of economics, to uncover the techniques of mass consumption.

The mass intellect of humanity is stirring, as it never has been stirred, with the hope for a better world. Mankind has witnessed fiat financing for war and man dreams of what could have been done with a trillion dollars and two billion people in terms of *cooperation based on good-will* instead of the tragic human and material waste of war. There is a humility at lay levels in the churches, a growing impatience with a leadership that refuses to lead, a growing recognition that truth and freedom and democracy and the essence of religion are all the same thing, and a universal receptivity toward a realistic appraisal of today's relation of men to their Creator. Today the prayer volume of humanity is at its all time high. From the Pope of Rome to the lowest peasant family mourning a bombed child, the petitions of humanity rise in crescendo to the Throne of Heaven. It appears that a spark of unity could set the world aflame with a crusade for a permanent peace and thus translate all those prayers into action.

Arthur Hood

Magnetic Flow

At the January 16, 1944 meeting of the American Physical Society, in New York City, Dr. Felix Ehrenhaft discussed for the first time in general conference his recent experiments, which are interpreted to mean that there are magnetic as well as electrical currents. The proposal is of such profound meaning to cosmology as well as all departments of science that we record adequate passages in the lecturer's own words, and linking abstracts by William L. Laurence, in the New York Times, January 16, 1944:

The experiments show that electricity and magnetism represent an indivisible pair. It can be said that the unification of the field theory has been indicated here in an experimental way, and electricity and magnetism may have to be expressed in the future by one symbol only.

"Until now the theory of magnetism has been based on Pereginus' experiment that a magnet put into a vessel floating on water showed direction and no motion. However, sensitive experiments have revealed that in the geo-magnetic field small particles of ferro-magnetic substances do move in opposite directions. This experiment can be performed in a homogenous magnetic field with particles of small size that reverse their direction of movement with the reversal of the field.

"These particles show that there are single magnetic poles, either north or south, or single magnetic charges. If these are sufficiently small we may call them magnetic ions. Such ions can be generated by applying friction, by chemical means, or by light, in the same manner that electric ions can be created."

A second new discovery in proof of the existence of a magnetic current was described by Dr. Ehrenhaft as follows:

"If the ends of one piece of pure soft iron are immersed in acidulated water, pure hydrogen is evolved. You can see the rising of gas bubbles. However, as soon as the ends of this piece of iron are magnetized north and south, no longer is pure hydrogen evolved. Instead we get a mixture of hydrogen and oxygen, or 2 to 12 per cent oxygen. The gas bubbles bearing a magnetic charge opposite in sign to the respective poles are retained thereon, while gas bubbles bearing a like sign are repelled, even against the force of bouyancy.

"This appearance of the oxygen shows that the water has been decomposed. Now, the decomposition of water by Volta's electric cell proved the existence of the electric current. In like manner, the decomposition of water by the magnet proves the existence of the magnetic current."

At this point Dr. Ehrenhaft displayed a permanent magnet and a long U-shaped glass tube fitted into it, with which, he reported, he had just succeeded in decomposing water. His previous experiments had been done with an electromagnet, in which the magnetism is temporary.

In this experiment the two pole pieces were immersed in acidulated water and the gasses evolved from the two poles were collected separately for chemical analysis. The analysis showed, Dr. Ehrenhaft reported, that oxygen and hydrogen had been evolved at both poles, but a "greater quantity of oxygen was found in every case to have come from the north pole."

One of the remarkable observations emerging from this experiment, which greatly interested the physicists, was that the pole strength of the permanent magnet considerably diminished in this process.

"During a period of twenty-four hours when the evolution of gases was taking place," Dr. Ehrenhaft reported, "the decrease appears to have been about 10 per cent and this loss has not since been regained."

Permanent magnets, it was explained, generally remain for years without the loss of pole strength. The loss of 10 per cent in one day would indicate, therefore, that the magnetic energy or current was used up in the decomposition of water.

GUILD OF AMERICAN ECONOMISTS

THE GUILD OF AMERICAN ECONOMISTS is a non-profit membership corporation organized in 1943, under the laws of the State of New York, to conduct research in a domain hitherto not explored by any other nation-wide group, and to publish its results. The term *Economists* is taken very broadly to include those engaged in multiple phases of study and practice which effectively define and help to bring about a free organic society. The term *American* is taken to refer not only to citizens concerned with internal and national affairs, but also those regardful of the place of this nation in a global society. The term *Guild* is appropriate to the educational methods and professional objectives of the work in hand.

The issue before the world is the maintenance and enlargement of freedom. Freedom may be defined in positive terms as conditioned by the number and character of natural moral laws known and the level of the technique at which those laws are used. They are expressed in natural phenomena generally. "The laws of nature and of nature's God" (in the words of the Declaration of Independence) have so far been expressed in statutory and constitutional laws of free peoples only. This has taken centuries. But in the economic domain mankind has experienced only a few generations of power industry, *and only some forty years of effective mass production or potential material abundance.* The growth of statutory law, ensuring political freedom in some degree, is threatened unless an intense and conscious effort be made at once to discover by systematic research the body of natural law which will ensure freedom in the economic area, at least equivalent to the body of natural law by which it was at one time assured us in the socio-legal or ethical area.

Organizing members of the Guild began the final stages of this work of discovery in 1940. The program demanded a survey of knowledge in all departments of human experience, manifestly a stupendous task. Nothing less, however, is appropriate to the problems involved, and hence an outline survey was seriously undertaken to determine in contemporary terms what is known concerning underlying order in nature, and the bearing of this order upon human society. This led to the outlines of the natural form of a free organic society, as one of the many forms in nature subject to metric treatment.

From this standard or form or canon it became possible to institute an equational study of the forces operating in a free organic mass production society. Socio-economic knowledge is elevated from the level it hitherto has occupied. It has been either the personal interpretation of history in terms idealistic or cynical, or it has been purely descriptive and statistical. The element of forecast was lacking. A standard or canon being now available for a metric sociology in which economics assumes an appropriate role as the science of stewardship, it follows that upon it, as an applied science, actually, industrial management required by genuine free enterprise can be securely rested. *The standard is mathematical, and its principles, when properly employed, are confirmed in operating statements from which they reflect in balance sheets.*

The Guild specializes in applications of its research to the planning of an organic society in which leisure, security, cultural ends and freedom are natural conspicuous features.

Correspondence is invited from progressive institutions of learning in which the acute social pressures and urgent problems of our times are prompting fundamental changes in outlook. To such institutions the Guild is available in the capacity of a professional consultant.

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